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T2.3 Evaluation Report of the FERTILE Community Platform in the pilot studies

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CONTENTS

Executive Summary

The FERTILE Community Platform (CP), result R2 of the FERTILE project, is a web platform that provides an online meeting point for teachers interested in (co-)designing, sharing and reusing Artful Educational Robotics (ER) projects. The CP also helps students during the enactment of Artful ER projects, providing instructions and learning resources, as well as facilitating interaction with the teachers. The design support provided by the FERTILE CP is closely aligned with the FERTILE Design Methodology (task T1.2), thus providing teachers with a pragmatic way of tackling the challenges posed by the design of Artful ER projects. The first version of the FERTILE CP was developed in the context of task T2.2, following the design guidelines elicited and discussed in task T2.1 and its corresponding report ("FERTILE Community Platform Design Requirements"). The goal of the FERTILE task T2.3 is to evaluate that first version of the FERTILE CP in the context of a set of small-scale pilot studies organised by the project partners in their countries. The evaluation results from task T2.3 are the basis for the improvements in the FERTILE CP that will be implemented before the start of the "training events" planned in the context of results R4 of the project ("FERTILE Training"). This report provides a brief summary of the development evolution of the first version of the FERTILE CP (including how it was initially tested within the project). The report also describes the evaluation data gathered during the pilots (and the associated gathering techniques), how that data has been analysed, and the main evaluation results obtained from that analysis. Finally, and in the light of the evaluation results, the report highlights the most significant improvements that are being applied to the next version of the FERTILE CP, the one that will be employed during the "training events".

1. Introduction

The FERTILE project's main aim is to propose a design methodology for blended learning Artful ER projects that cultivate Computational Thinking (CT), as well as a Community Platform (CT) for remote collaboration of teachers and students that design and enact such projects, respectively. The FERTILE CP (FCP) is the expected R2 result from FERTILE. The FERTILE partners worked in task T2.1 with the main aim of eliciting and agreeing on a set of functional requirements for the FCP. The outcome of T2.1 was reflected in the report "T2.1 FERTILE Community Platform Design Requirements" (FERTILE, 2023) and included the definition of 21 use cases, informed by the opinions and feedback provided by members of the partners' teams and some external teachers, as well as by the work carried out during the definition of the FERTILE Design Methodology (FDM) in the context of task T1.3.

Using the elicited design requirements, the FERTILE consortium started the development of the FCP in March, 2023. A first, fully functional version of the FCP (FCP v0.9) was internally tested, by the project members, during the Transnational Project Meeting held in Athens, in October 2023. A thorough overhauling of the FCP was carried out using the feedback gathered during the Athens meeting, together with the development of the associated training materials, so that the first complete version of the CP was employed during the initial evaluation pilots in Greece (UNIWA), Czech Republic (CUP), Slovakia (CUB), and Spain (UJRC), between December 2023 and April 2024. During those pilot studies, evaluation data about the FCP was gathered, trying to understand the perception of the participants in the pilots about the different functional features of the FERTILE CP. Additionally, the UVA team collected a list of software bugs, that were identified by the participants of the pilots, and solved several of them during the actual enactment of pilots.

This report starts by summarising the development process and the status of the first version of the FCP (FCP v1.0), released in December 2023, that was employed during the evaluation pilots (section 2). Then, section 3 describes the pilots in which the FCP v1.0 was evaluated, as well as the instruments that were employed for gathering the evaluation data. Section 4 is devoted to the analysis of the evaluation data and the identification of the main findings. Finally, section 5 discusses the evaluation findings and sketches a development roadmap towards the next version of the FCP (v2.0) that will be employed during the training events that start in May 2024. The ultimate goal is taking the necessary steps to the development of the final version of the FCP and that will constitute the envisioned FERTILE result R2. Figure 1 shows graphically all the steps carried out in the last 15 months, described in detail in the following sections.

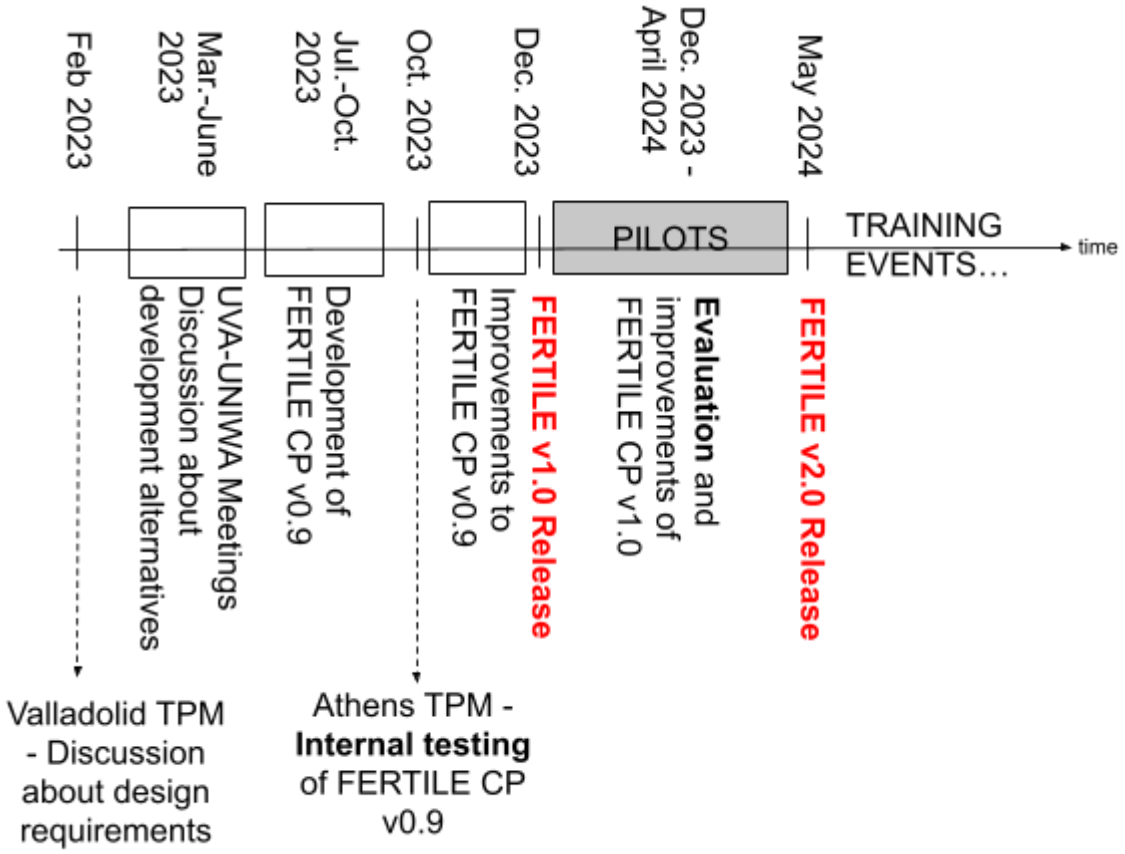


Figure 1. Timeline of the FERTILE CP development and evaluation..

2. Towards the FERTILE Community Platform v1.0

This section summarises the work carried out in the context of the FERTILE project to develop a first functional prototype of the FERTILE CP (v0.9, see section 2.1) and how it was evaluated internally in the project to improve it before a set of evaluating pilots (section 2.2).

2.1 Main functional features and development process

During Task T2.1 of the project ("FERTILE Community Platform Design Requirements") the main functional features of the FCP were elicited (FERTILE, 2023). 21 use cases were defined and grouped under the following functional areas: User Management, Community Support, Design Support, Enactment Support, Community Analytics.

In the Valladolid Transnational Project Meeting (TPM3), February 2023, several open issues were identified for further discussion: the need for a more precise definition of the roles of the teachers in the FCP, the functional scope of the community analytics of the platform, and how to create and deliver the so-called "instructions for enactment" intended to be used by the students. Also, two main alternatives to the development of the FCP were discussed among the partners, although a final decision was not made:

- The "ILDE (Integrated Learning Design Environment) approach": developing a new Learning Design tool, based on the FERTILE Design Methodology (FDM) (FERTILE, 2023a), and integrating it into an existing Learning Design platform such as ILDE (Hernández-Leo et al., 2018).
- The "CMS (Content Management System) approach": leveraging the previous work of UVA on community platforms in various ERASMUS+ projects based on existing, and widely used CMSs. Joomla[1] was the CMS UVA had experience with, although other CMSs (e.g., WordPress[2]) were also suggested within the consortium.

In the period March-June 2023, UVA and UNIWA met several times and exchanged email messages to discuss the open issues, also taking into account the progress on the definition of the FDM (task 1.3). In that regard, UNIWA practitioners on educational robotics provided examples of the potential roles of the teachers, as well as of how the enactment of the Artful ER projects with students might be supported by the platform. Meanwhile, UVA carried out a deeper assessment of the technical alternatives for the development of the FCP. The main conclusions of that assessment were presented in an UNIWA-UVA online meeting that took place on the 3rd of July, 2023:

- The "ILDE approach" is based upon a platform specifically devoted to supporting communities of "teachers as designers", thus providing desired functionalities such as the reuse and sharing of designs. Also, the ILDE user interfaces have evolved during the last years towards more usable and appealing versions[3]. Indeed, ILDE was mentioned in the FERTILE proposal as a potential starting point for the development of the FERTILE

[1] https://www.joomla.org/, last visited: April, 2024.
[2] https://wordpress.com/, last visited: May, 2024.
[3] See, e.g., https://ildeplus.upf.edu/DTIPS/, last visited: May, 2024.

CP. However, ILDE showed several disadvantages: it does not provide many-to-many communication means (e.g., forums, a feature that was deemed necessary by the FERTILE consortium); it is offered as a service and not as software (which implies that the FERTILE consortium is not allowed to make changes to the core components of the ILDE); and it does not provide support to students for the enactment of the educational projects created by the teachers (another important requirement for the FERTILE CP identified in D2.1).

- The "CMS approach" would benefit from the powerful social extensions of existing platforms (e.g., EasySocial[4] for Joomla) that include forums, messaging, rating, etc., as well as from numerous presentation templates, customization application programming interfaces (APIs), etc. However, UVA's technical assessment of WordPress and Joomla showed that the support for the duplication, sharing and co-edition of documents (considered as the basis for FERTILE projects) in those platforms was not straightforward and would require substantial modifications to their core building blocks.

Taking into account the identified pros and cons of the two originally considered development approaches, UVA proposed a third alternative: starting the development of a new platform that would integrate existing libraries for supporting the particular desired functional features of the FERTILE CP. The new approach would imply taking a "step back" from the initial approaches, since it would skip the reuse of an existing fully functional platform. Although this might result in an initial higher development effort, the new approach would allow the FERTILE consortium to move the integration and modification efforts envisioned for both the "ILDE approach" and the "CMS approach" to the development of a platform more customised to the FERTILE needs and under total control of the FERTILE software developers.

Using the considerations described above as input, UVA developed an initial mock-up of the FERTILE CP using the Laravel PHP Framework[5], a set of libraries widely used in the development of Web applications, with a very active community of developers. UVA developers had previous experience with that framework and were able to check, with the rapid development of the mock-up, the feasibility of implementing the problematic functional features for the other alternatives: co-design, sharing, forums, etc. This Laravel-based mock-up of the platform was presented to UNIWA in July, 2023, and it was decided to continue the development of the FERTILE CP using this approach.

During subsequent meetings between UNIWA and UVA (27/July/2023, 28/Sept./2023, 3/Oct./2023) different versions of the FERTILE CP were presented and discussed, identifying software "bugs'' and proposing the addition and/or modification of functionalities and their corresponding user interfaces. Interestingly, it was agreed to use an expandable tree-like representation to scaffold the design of Artful ER projects (being the main phases of the Fertile Design Methodology the main branches of that tree). This approach was expected to provide the participating teachers with a graphical overview of the project, aiming to fulfil the functional requirement "Visualise summary of Artful ER projects" identified in D2.1).

[4] https://extensions.joomla.org/extension/easysocial/, last visited: May, 2024.
[5] https://laravel.com/, last visited: May, 2024.

Finally, a fully-functional version of the FERTILE CP (v0.9) was developed and shared before for the Transnational Project Meeting (TPM) that took place in Athens, 19th and 20th of October, 2023. The following subsection describes how that initial prototype was tested.

It is important to underline that the functional feature "Community Analytics" was not completely developed before the internal testing and the training events in which the FERTILE Community Platform was employed by real users. Although it was agreed by the FERTILE partners that this functionality is not intended to be used by the users of the CP, only by the administrators of the platform, it might have been very useful for providing additional evaluation data. In any case, at the moment of releasing this report, the "Community Analytics" functionality has been implemented and will be employed by the project partners during the Multiplier Events, as part of the FERTILE CP v2.0. Appendix F provides a description of the recently implemented "Community Analytics".

2.2 Internal testing of FERTILE CP v0.9

On Oct. 19th, during the Athens TPM, a specific 3.5-hour session was devoted to the presentation and testing of the FERTILE CP v0.9 within the FERTILE consortium. 7 FERTILE members participated on-site, while other 4 participated online. 3 UVA members (2 on-site, 1 online) coordinated the sessions and compiled a set of relevant observations. The 11 non-UVA participants were provided with a step-by-step worksheet that guided them during the testing of the main functional features of the platform. That same worksheet included a set of short questionnaires for gathering the opinion of the participants, as well as a final usability survey based on the widespread SUS System Usability Scale (Brooke, 1996). The worksheet employed in the testing session can be found in Appendix A. After the testing session, two UVA members analysed the observations and the answers to the questionnaires and came up with a list of software bugs and suggestions for improvements that can be found in Appendix B. Interestingly, the obtained average SUS score was 83.5, which might suggest a "GOOD" (almost "EXCELLENT", being the threshold at 85.5, see Figure 2) level of usability of the prototype (Bangor et al., 2009).

ADJECTIVE	MEAN SUS SCORE
Worst Imaginable	12.5
Awful	20.3
Poor	35.7
OK	50.9
Good	71.4
Excellent	85.5
Best Imaginable	90.9

Figure 2. Mean SUS scores for Adjective Ratings (Bangor et al., 2009).

All the software bugs and functional features identified during the Athens TPM were addressed by the UVA software development team that generated a new version, the FERTILE CP v1.0, that was released on Dec. 2023 (milestone M2.2). This was the version that was employed during the FERTILE pilots and that is the focus of the evaluation reported in this document. Together with the release of FERTILE CP v1.0, UVA developed the following training resources (see also deliverable D3.1 on training materials):

- A promotional video about the FERTILE CP.
- A "video lecture" explaining visually the main functional features of the FERTILE CP.
- A step-by-step worksheet, updated from the one used for FERTILE CP v0.9, that also included short questionnaires for gathering evaluation data from the participants in the pilots. This updated worksheet can be found in Appendix C.

3. Evaluation Pilots

3.1 Context and participants

The evaluation of the FERTILE CP v1.0 was carried out in the context of 4 training pilots with in- and pre-service teachers in the 4 countries of the consortium (Slovakia-CUP, Greece-UNIWA, Czech Republic-CUP, and Spain-URJC), from December 2023 to March 2024. The CUP pilot was enacted in two consecutive editions. URJC also carried out two editions of the pilot: one (URJC@URJC) at URJC premises (Madrid), and another one (URJC@UVA) at UVA premises (Valladolid).

Table 1 provides a basic description of the training pilots. As Table 1 suggests, the pilots differed in their duration, as well as in the amount of time devoted to the use of the FERTILE CP v1.0 by the participants.

Table 1. Short description of the training pilots in which the FERTILE CP v1.0 was evaluated.

Pilot	**Dates of the pilot (start-end)**	**# Total face to face training hours**	**# Total Online sync. training hours**	**Approx. # hours using the FERTILE CP (synchronous and/or asynchronous)**	**# Participants providing feedback about the CP**
CUB	20/Jan/2024 - 12/Feb/2024	0	4	4 synchronously 15 asynchronously	19
UNIWA	26/Oct/2023-16/Feb/2024	11	13	2 synchronously At least 10 asynchronously	9
CUP	First run 18/Jan/2024 - 25/Jan/2024	2	0	2 asynchronously	10
	Second run 28/Feb/2024 - 7/Mar/2024				
URJC @URJC	At URJC Premises 23/Feb/2024 - 1/Mar/2024	6	1	4 synchronously	17
URJC @UVA	At UVA Premises 11/Mar/2024 -18/Mar/2024				
				TOTAL NUMBER OF INFORMANTS	**55**

However, despite their differences in terms of overall duration and time devoted to an explicit presentation of the Fertile CP to the participants, as suggested by Table 2, all the pilots relied on the same set of training resources for helping the participants get familiar with the FERTILE CP. Similarly, all pilots involved their participants in the creation of an Artful ER project (mostly in pairs).

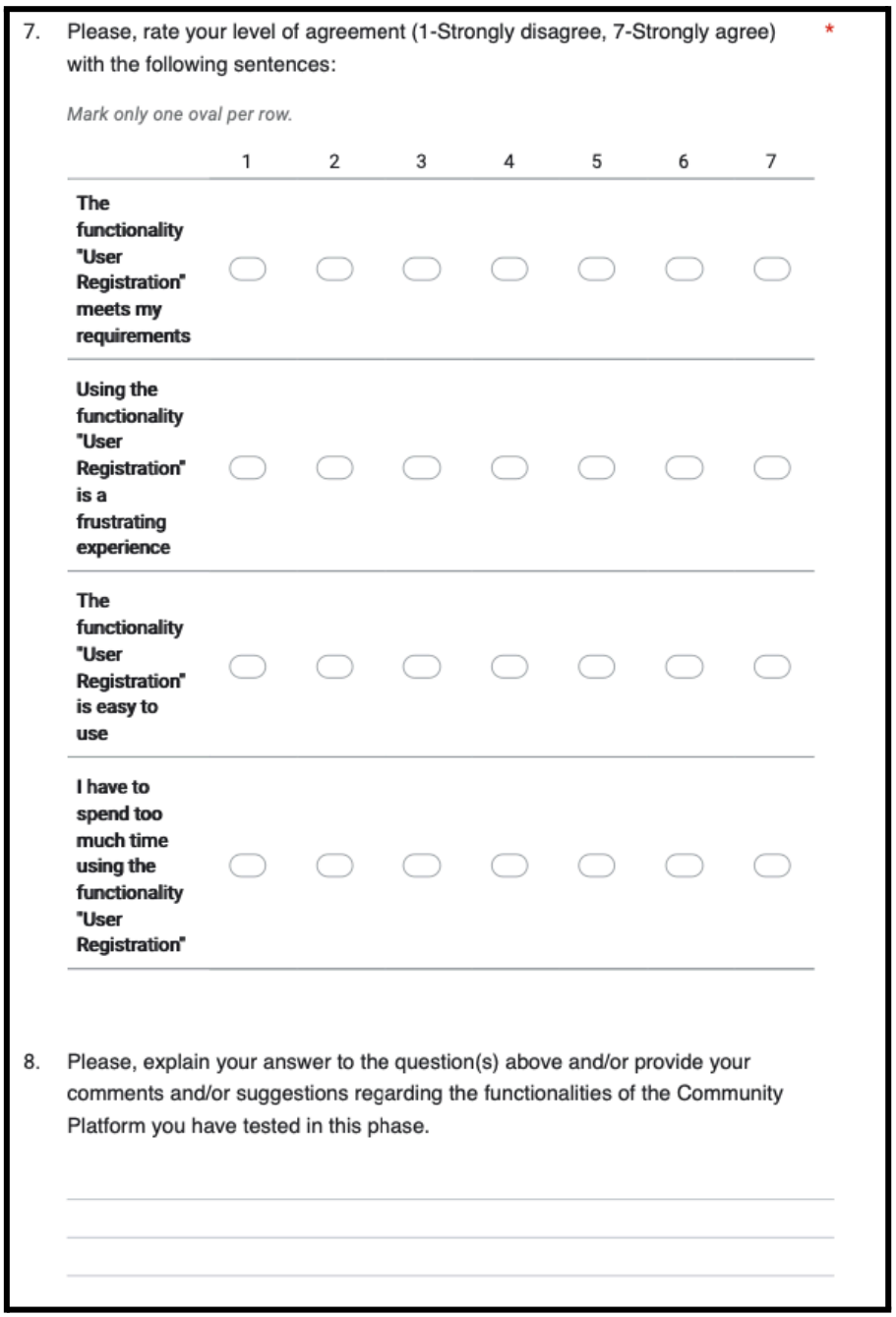
Table 2. Training resources and activities employed for introducing the FERTILE CP v1.0 in the pilots.

Pilot	**Training resources employed for introducing the FERTILE CP**	**Time, from synchronous training sessions, devoted to the introduction of the FERTILE CP**	**Was the FERTILE CP employed in any of the training activities? How?**
CUB	Introductory Video about the FERTILE CP Electronic material with instructions about the activity in which the FERTILE CP should be used. Worksheet about the FERTILE CP (with a detailed example of usage)	Participants used the introductory materials about the FERTILE CP asynchronously. Doubts were submitted to the trainers using the FERTILE CP messaging system. Doubts were later discussed during 20 min. (approx.) of a face-to-face session.	Mandatory activity in which participants, working in pairs, were asked to create an Artful ER project using the FERTILE CP.
UNIWA	Introductory Video about the FERTILE CP Electronic material with instructions about the activity in which the FERTILE CP should be used. Worksheet about the FERTILE CP (with a detailed example of usage)	2 hours of a synchronous session were employed for introducing the FERTILE CP.	Main assignment to complete the course, but due to technical problems participants also had to deliver the project they had designed in another file format.
CUP (1st run)	Introductory Video about the FERTILE CP Worksheet about the FERTILE CP (with a detailed example of usage)	10 minutes of a synchronous session, just to check that the participants were adequately registered in the CP.	During the 2nd face-to-face session the participants, in pairs, worked on their design project. They also worked asynchronously on the project.

CUP (2nd run)	Introductory Video about the FERTILE CP Worksheet about the FERTILE CP (with a detailed example of usage)	No time from the synchronous sessions was employed for introducing the FERTILE CP to the participants.	During the 2nd face-to-face session the participants, in pairs, worked on their design project. They also worked asynchronously on the project.
URJC@URJC and URJC@UVA	Introductory Video about the FERTILE CP Worksheet about the FERTILE CP (with a detailed example of usage)	2 hours of a synchronous session were employed for introducing the FERTILE CP to the participants	Participants, organised in pairs, worked on their own design projects both synchronously and asynchronously.

3.2 Data collection

Similarly to what was done during the evaluation of the FERTILE CP v0.9 (see section 2, above), a set of short questionnaires were embedded into the step-by-step training worksheet that was provided to the participants. In this occasion, the questionnaires for each one of the functionalities of the platform were structured following the Usability Metric for User Experience (UMUX) model (Finstad, 2010). Therefore, for each of the FERTILE CP main functionalities, participants were asked to rate (in a 1-Strongly disagree to 7-Strongly agree scale) four statements that correspond to the four "usability components" defined by UMUX: "this <functionality> meets my requirements", to indicate *effectiveness*; "using this <functionality> is a frustrating experience", to indicate *satisfaction*; "this <functionality> is easy to use", to indicate *ease of use*; and, "I have to spend too much time designing with this <functionality>", to indicate *efficiency*. Figure 3 shows a fragment of the worksheet. According to (Finstad, 2010), once responses are collected, odd items are scored as [score – 1], and even items are scored as [7 – score]. Then all the scores are summed up, divided by 24, and multiplied by 100 to get a score between 0 and 100. Scores across participants are then averaged to find a mean UMUX score. According to (Lewis et al., 2018), empirical data suggests that UMUX and SUS "*largely appear to be measuring the same thing, presumably, perceived usability*" and thus their results can be interpreted in a similar fashion (see Figure 2 above for an interpretation based on adjectives). In any case, and going beyond individual functional features, participants were also asked to complete a SUS questionnaire about the FERTILE CP as a whole. Finally, the worksheet about the FERTILE CP also included open-ended questions that allow participants to elaborate their opinions about the specific functionalities. Appendix C includes the complete worksheet employed during the pilots.



7. Please, rate your level of agreement (1-Strongly disagree, 7-Strongly agree) with the following sentences: *

Mark only one oval per row.

	1	2	3	4	5	6	7
The functionality "User Registration" meets my requirements	◯	◯	◯	◯	◯	◯	◯
Using the functionality "User Registration" is a frustrating experience	◯	◯	◯	◯	◯	◯	◯
The functionality "User Registration" is easy to use	◯	◯	◯	◯	◯	◯	◯
I have to spend too much time using the functionality "User Registration"	◯	◯	◯	◯	◯	◯	◯

8. Please, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

Figure 3. UMUX and open-ended questions corresponding to the "User registration" functionality of the FERTILE CP v1.0 as included in the step-by-step worksheet employed during the pilots (the complete worksheet can be found in Appendix C).

The answers to the open-ended questions were translated into English by the pilot organisers, and then analysed by UVA researchers to obtain the findings described in the following section.

4. Data Analysis and Results

The following subsections summarise the analysis of the data gathered with the instruments described in section 3. First of all, sections 4.1 through 4.9 analyse the data from the UMUX questionnaires associated with each one of the main FERTILE CP functionalities, reporting the average scores (in total and per individual pilot, see subsection 3.1) and the distribution of the answers to the individual items (see Figure 2, in section 2.2 for an interpretation of the scores based on adjectives). Additionally, answers to the open ended question associated with each of the functionalities are used, on the one hand, to try to make sense of the quantitative results and, on the other hand, to help identify the main findings from this evaluation and specific aspects to improve. Similarly, section 4.10 is devoted to the reporting and analysis of the SUS data and the associated open-ended questions about the overall perception of the FERTILE CP as a whole. Appendix C shows all the UMUX and open-ended questions employed during the pilot (as part of the training worksheet) for gathering evaluation data.

4.1 User Registration

Tables 3 and 4 summarise the quantitative data gathered in relation with the "User Registration" functionality. The average score (54 responses) is 70,29 (in a 0-100 scale), that corresponds to the adjective "OK" (Bangor et al., 2009). 24 answers to the open-ended question about this functionality were provided, indicating:

- The general perception about this functionality was positive. 15 (62,5%) were positive comments. For instance "*Registering as a user on the platform is appropriate, fast, and efficient; it is not frustrating*" (URJC@UVA) or "*I thought the registration was seamless, intuitive and similar to other websites. The questions in the profile are well worded, so I know what to fill in*" (CUB).
- Some participants (3 answers, 12,5%) reported problems with the confirmation e-mail message, since it was classified as "spam" by their email clients. For instance: "*I noticed too late that it had fallen into spam and when I tried to register it wouldn't let me. I had to reset my password*" (CUB). Although both the platform itself and the training material already informed participants about this possibility, a potential action to remedy this problem would be to ask trainers of future training events to warn the participants explicitly about this issue.
- 4 CUP participants (16,6%) complained about the excessive delay in receiving the confirmation email message. This fact was tracked down to a software issue that was solved and did not appear again in the following pilots. ok (see Table 4).

USER REGISTRATION			AVERAGE	70.29
			SD	8.91
				N=54
Effectiveness (positive tone)	Satisfaction (negative tone)	Overall ease of use (positive tone)	Efficiency (negative tone)	
0.00%	57.41%	0.00%	51.85%	1 (Strongly disagree)
0.00%	24.07%	1.85%	16.67%	2
1.85%	1.85%	3.70%	9.26%	3
3.70%	5.56%	9.26%	7.41%	4
12.96%	5.56%	3.70%	7.41%	5
14.81%	1.85%	22.22%	5.56%	6
66.67%	3.70%	59.26%	1.85%	7 (Strongly agree)

Table 3. Overall UMUX scores regarding the "User Registration" functionality.

Pilot	Number of answers	Average UMUX Score
CUB	19	65.13
UNIWA	8	75.00
CUP	10	72.92
URJC@URJC	5	80.00
URJC@UVA	12	69.10
TOTAL	54	

Table 4. UMUX scores per pilot regarding the "User Registration" functionality.

4.2 List, search for, send messages

Tables 5 and 6 summarise the quantitative data gathered in relation with the "List, search for, send messages" functionality. The average score (53 responses) is 65,33 (in a 0-100 scale), that corresponds to the adjective "OK" (Bangor et al., 2009). 24 answers to the open-ended question about this functionality were provided, indicating:

- The general perception about this functionality was positive. 12 (50%) were positive comments. For instance "*The functions of "List, search for, and send messages to teachers" are entirely understandable and user-friendly.*" (UNIWA) or "*Communication through the platform is very fast and efficient.*" (URJC@UVA).
- However, 2 participants (8%) perceived this functionality somewhat complicated and not user-friendly enough, although they do not provide hints about how to improve the functionality: "*I found the system a bit complicated for messaging*" (CUB) or "*I would prefer the functionality of messages to be more user friendly. Convenient procedure*" (CUB)
- 7 participants (30%) detected a problem when trying to send a message after having performed a search or applied a filter to the list of potential recipients of the messages. For instance: "*After filtering by some criterion, it does not allow sending messages*" (URJC@URJC) or "*After searching for a teacher via search, the "message" button didn't work. It was necessary to search for him/her by clicking through all teachers without using search*" (CUP). This problem was added to the list of software bugs to be solved (see Appendix D).
- 3 participants (12,5%) made interesting suggestions for the improvement of the functionality: "*I'd like on the screen that shows the users-teachers, the ones I follow to appear first so I can find them more easily*" (UNIWA), "*When searching for a teacher, I would appreciate the ability to filter by country and the option to select multiple languages*" (CUB), or "*I would expect that when posting messages, the platform directs me straight to the chats*" (UNIWA). These issues have been added to the list of potential improvements for version 2.0 of the FERTILE CP.

LIST, SEARCH FOR, SEND MESSAGES			AVERAGE	65.33
			SD	12.00
				N=53
Effectiveness (positive tone)	Satisfaction (negative tone)	Overall ease of use (positive tone)	Efficiency (negative tone)	
0.00%	52.83%	0.00%	50.94%	1 (Strongly disagree)
3.77%	16.98%	1.89%	26.42%	2
7.55%	5.66%	1.89%	5.66%	3
9.43%	7.55%	3.77%	9.43%	4
15.09%	9.43%	11.32%	3.77%	5
13.21%	1.89%	30.19%	1.89%	6
50.94%	5.66%	50.94%	1.89%	7 (Strongly agree)

Table 5. Table 3. Overall UMUX scores regarding the "List, search for, send messages" functionality.

Pilot	Number of answers	Average UMUX Score
CUB	19	61.62
UNIWA	8	70.83
CUP	9	68.06
URJC@URJC	5	60.83
URJC@UVA	12	67.36
TOTAL	53	

Table 6. UMUX scores per pilot regarding the "List, search for, send messages" functionality.

4.3 Create and participate in forums

Tables 7 and 8 summarise the quantitative data gathered in relation with the "Create and participate in forums" functionality. The average score (53 responses) is 65,09 (in a 0-100 scale), that corresponds to the adjective "OK" (Bangor et al., 2009). 15 answers to the open-ended question about this functionality were provided, indicating:

- The general perception about this functionality was positive. 7 (46%) were positive comments. For instance, "*The option to create forums and participate in them on the platform is very simple and easy to locate and use*" (URJC@UVA) or "*so far I have only used the forum feature to read content and posts, I don't see a problem in using it*" (CUB).
- One 1 participant (6%) indicates that "*Creating a forum is confusing to me*" (CUB), although s/he does not explain the source of the confusion.
- For 2 CUB participants (13%), the functionality was not that interesting and engaging: "*I haven't used this part much so I can't comment on it knowledgeably*" (CUB), and "*I haven't created a working forum yet, I went through this chapter rather informationally*" (CUB).
- 4 CUP participants (26%) detected the lack of Czech translations of some forum-related messages in the user interface. This problem was addressed and solved right after the end of the CUP pilot.
- 1 CUB participant (6%) suggested enabling the uploading of images as part of the forum messages: "*I'm kind of missing the option to add a picture. Often people solve some problems through the forum for example and as they say a picture is worth 1000 words, so sometimes if a person added a printscreen of the screen it would probably explain it better than words*" (CUB).

CREATE AND PARTICIPATE IN FORUMS			AVERAGE	65.09
			SD	12.43
				N=53
Effectiveness (positive tone)	Satisfaction (negative tone)	Overall ease of use (positive tone)	Efficiency (negative tone)	
0.00%	56.60%	1.89%	56.60%	1 (Strongly disagree)
5.66%	16.98%	0.00%	20.75%	2
5.66%	1.89%	3.77%	3.77%	3
5.66%	13.21%	9.43%	5.66%	4
18.87%	5.66%	11.32%	7.55%	5
18.87%	1.89%	26.42%	3.77%	6
45.28%	3.77%	47.17%	1.89%	7 (Strongly agree)

Table 7. Overall UMUX scores regarding the "Create and participate in forums" functionality.

Pilot	Number of answers	Average UMUX Score
CUB	19	62.72
UNIWA	8	71.88
CUP	9	57.41
URJC@URJC	5	70.00
URJC@UVA	12	68.06
TOTAL	53	

Table 8. UMUX scores per pilot regarding the "Create and participate in forums" functionality.

4.4 Create a design

Tables 9 and 10 summarise the quantitative data gathered in relation with the "Create a design" functionality. The average score (53 responses) is 65,41 (in a 0-100 scale), that corresponds to the adjective "OK" (Bangor et al., 2009). 33 answers to the open-ended question about this functionality were provided, indicating:

- There were 7 (21%) positive opinions about the functionality. For instance: "*Everything is explained very clearly*" (URJC@UVA) or "*Creating activities in this step is good and works as expected*" (CUP).
- 18 (54%) comments from the CUB, UNIWA, and URJC@URJC were related with a software "bug" that precluded the correct saving of designs in the platform. This was a relevant issue that was solved before the URJC@UVA pilot. This may explain the increase of the UMUX score in that pilot, that was the one that took place the latest (see table 10). Also, none of the comments from that last pilot referred to that software bug.
- 8 (24%) comments identified minor software bugs or provided suggestions about how to improve the functionality. In some cases, e.g., "I*t has been a little more complicated to understand what to put in each section"* (URJC@UVA) were more related to the understanding of the FERTILE Design Methodology on which this functionality is based. But other comments, e.g., "*When I add a computational thinking skill, the first skill is in Slovak, but when I add the next one, it's now in English*" (CUB) pointed to software issues (in this case, in relation to the multilingual support of the platform). The identified software issues were addressed after the pilots (see Appendix D).

CREATE A DESIGN			AVERAGE	65.41
			SD	14.95
				N=53
Effectiveness (positive tone)	Satisfaction (negative tone)	Overall ease of use (positive tone)	Efficiency (negative tone)	
1.89%	41.51%	1.89%	28.30%	1 (Strongly disagree)
5.66%	18.87%	3.77%	18.87%	2
3.77%	13.21%	9.43%	9.43%	3
9.43%	3.77%	7.55%	7.55%	4
20.75%	9.43%	18.87%	11.32%	5
28.30%	9.43%	24.53%	13.21%	6
30.19%	3.77%	33.96%	11.32%	7 (Strongly agree)

Table 9. Overall UMUX scores regarding the "Create a design" functionality.

Pilot	Number of answers	Average UMUX Score
CUB	19	65.13
UNIWA	8	70.83
CUP	9	61.57
URJC@URJC	5	58.33
URJC@UVA	12	68.06
TOTAL	53	

Table 10. UMUX scores per pilot regarding the "Create a design" functionality.

4.5 List, search, filter, comment, and rate a design

Tables 11 and 12 summarise the quantitative data gathered in relation with the "List, search, filter, comment, and rate a design" functionality. The average score (53 responses) is 68,40 (in a 0-100 scale), that corresponds to the adjective "OK" (Bangor et al., 2009). Only 13 answers to the open-ended question about this functionality were provided, indicating:

- Most comments, 11/13 (85%) were positive opinions about the functionality. For instance: "*Really fine and quite clear for me.*" (CUP) or "*Excellent, it meets the objectives*" (URJC@UVA).
- 1 participant (8%) explained that: "*On the one hand, I understand that the platform is limited so that only one person can work at a time, but I don't like that a red countdown appears at the top when I edit a project as soon as I don't write anything for 30 seconds. This countdown is terribly unnerving and I can't concentrate on filling in the items*". This is an issue that was also underlined by some participants in the "Create a design" functionality. Since the platform does not allow synchronous edition of the designs and, therefore, only one user can edit a design at a time, the platform displayed an "inactivity timer" to avoid "deadlocks" (i.e., a user that "forgets" that s/he is editing a design might preclude other co-authors from editing that same design indefinitely). Once the "inactivity timer" expires, the platform would interrupt the editing session by the inactive user, thus allowing the editing by other co-authors. However, the feedback from the participants in the pilots suggests that displaying the status of the timer was not the right option. Therefore, this issue has been addressed by not displaying the timer, and simply warning the user (with a "pop-up message") when the timer was about to expire.

LIST, SEARCH, FILTER, COMMENT, AND RATE DESIGN			AVERAGE	68.40
			SD	11.57
				N=53
Effectiveness (positive tone)	Satisfaction (negative tone)	Overall ease of use (positive tone)	Efficiency (negative tone)	
1.89%	71.70%	0.00%	66.04%	1 (Strongly disagree)
0.00%	11.32%	1.89%	16.98%	2
1.89%	0.00%	0.00%	1.89%	3
5.66%	5.66%	3.77%	5.66%	4
16.98%	5.66%	16.98%	5.66%	5
16.98%	3.77%	16.98%	1.89%	6
56.60%	1.89%	60.38%	1.89%	7 (Strongly agree)

Table 11. Overall UMUX scores regarding the "List, search, filter, comment, and rate a design" functionality.

Pilot	Number of answers	Average UMUX Score
CUB	19	66.01
UNIWA	8	73.96
CUP	9	66.20
URJC@URJC	5	70.00
URJC@UVA	12	69.44
TOTAL	53	

Table 12. UMUX scores per pilot regarding the "List, search, filter, comment, and rate a design" functionality.

4.6 Share and reuse a design

Tables 13 and 14 summarise the quantitative data gathered in relation with the "Share and reuse a design" functionality. The average score (53 responses) is 66,90 (in a 0-100 scale), that

corresponds to the adjective "OK" (Bangor et al., 2009). 17 answers to the open-ended question about this functionality were provided, indicating:

- The majority of the comments (10 answers, 58%) were positive opinions about the functionality. For instance: "*I am satisfied with this section*" (CUB) or "*Works as described and is as straightforward as can be*" (CUP).
- 2 comments (12%) suggest that this functionality is not very intuitive to use: "*I don't understand it too much and I'm not too sure about this step*" (CUP), "*Before the instructions, when I was looking to add a user to my project I thought there would be a button that said add person/collaborator. Without having read the instructions it took me a while to figure out how to do it*" (UNIWA). This latter comment suggests that the explanations provided in the training material are clear enough, but we decided to improve it anyway to better explain the differences between "sharing" (i.e., the same instance of a design can be accessed and edited by several members of the community) and "reusing" (i.e., a new copy of an existing design is made and owned by a different member of the community).
- 4 comments (24%) provided suggestions for improving this functionality. 2 of them suggest to use "sliders" for sharing, 1 suggests to make more visible the authorship of the designs, and 1 complains about problems with "saving" (probably related to the software "bug" reported in section 4.4).

SHARE AND REUSE DESIGN			AVERAGE	66.90
			SD	11.45
				N=53
Effectiveness (positive tone)	Satisfaction (negative tone)	Overall ease of use (positive tone)	Efficiency (negative tone)	
0.00%	56.60%	0.00%	58.49%	1 (Strongly disagree)
3.77%	26.42%	1.89%	26.42%	2
1.89%	3.77%	1.89%	3.77%	3
3.77%	1.89%	3.77%	5.66%	4
15.09%	7.55%	18.87%	0.00%	5
24.53%	1.89%	24.53%	5.66%	6
50.94%	1.89%	49.06%	0.00%	7 (Strongly agree)

Table 13. Overall UMUX scores regarding the "Share and reuse a design" functionality.

Pilot	Number of answers	Average UMUX Score
CUB	19	66.23
UNIWA	8	73.44
CUP	9	65.28
URJC@URJC	5	64.17
URJC@UVA	12	65.97
TOTAL	53	

Table 14. UMUX scores per pilot regarding the "Share and reuse a design" functionality.

4.7 Publish a design

Tables 15 and 16 summarise the quantitative data gathered in relation with the "Publish a design" functionality. The average score (53 responses) is 70,05 (in a 0-100 scale), that corresponds to the adjective "OK" (Bangor et al., 2009). Only 14 answers to the open-ended question about this functionality were provided, indicating:

- The majority of the comments (10 answers, 71%) were positive opinions about the functionality. For instance: "*It took me longer, but in the end everything was ok*" (CUB) or "*Publishing designs enriches the teaching and learning process*" (URJC@UVA).
- 2 comments suggest that this functionality is not clear enough: "*I hope it's okay, but I'd rather do this whole thing with someone standing behind me and making sure I'm doing it right*" (CUP), "*What is the difference between publish and publicly visible?*" (CUP). These comments point out a possible confusion between the "publish" functionality (i.e., making a design visible to people not registered in the FERTILE CP) and the "make a design public available" functionality (i.e., making a design visible to the FERTILE CP community, but not to people outside the platform). This issue will be addressed in the new version of the FERTILE CP by:
    - Changing the terminology in the user interface and in the training material: now the FERTILE CP differentiates between: "Show in repository" and make a design "Public on the Internet".
    - Improving the explanations about the differences between these two options in the new versions of the training material.
- 2 minor bugs were identified and incorporated in the list shown in Appendix D.

PUBLISH DESIGNS			AVERAGE	70.05
			SD	10.43
				N=53
Effectiveness (positive tone)	Satisfaction (negative tone)	Overall ease of use (positive tone)	Efficiency (negative tone)	Response
0.00%	71.70%	0.00%	64.15%	1
3.77%	16.98%	1.89%	18.87%	2
1.89%	0.00%	1.89%	0.00%	3
5.66%	5.66%	5.66%	5.66%	4
3.77%	3.77%	11.32%	5.66%	5
22.64%	0.00%	16.98%	3.77%	6
62.26%	1.89%	62.26%	1.89%	7

Table 15. Overall UMUX scores regarding the "Publish a design" functionality.

Pilot	Number of answers	Average UMUX Score
CUB	19	68.42
UNIWA	8	76.56
CUP	9	69.91
URJC@URJC	5	70.00
URJC@UVA	12	68.40
TOTAL	53	

Table 16. UMUX scores per pilot regarding the "Publish a design" functionality.

4.8 Manage classrooms and associate designs for enactment

Tables 17 and 18 summarise the quantitative data gathered in relation with the "Manage classrooms and associate designs for enactment" functionality. The average score (53 responses) is 66,35 (in a 0-100 scale), that corresponds to the adjective "OK" (Bangor et al., 2009). Only 14 answers to the open-ended question about this functionality were provided, indicating:

- Half of the comments (7 answers, 50%) were positive opinions about the functionality. For instance: "*Although I didn't use the Design enactment actually with my students I found the process very easy to use*" (UNIWA) or "*Creating a class is easy and fast.*" (URJC@UVA).

- However, 2 comments (14%) raise some concerns about the complexity of this functionality. While one of the comments suggests a translation problem: "*This phase is really more complicated. It is difficult to meet in it, especially for students who are not very confident in the English language" (CUP), the other one does not provide clues about the reason for the negative perception: "I can't imagine a use for students in the lower grades*" (CUB).
- Nevertheless, 5 more comments (3 by CUB, and 2 by CUP) make suggestions for specific improvement of the functionality (incorporated in the list of software bugs and changes of Appendix D).

MANAGE CLASSROOMS AND ASSOCIATE DESIGN FOR ENACTMENT			**AVERAGE**	**66.35**
			SD	**12.76**
				N=53
Effectiveness (positive tone)	**Satisfaction (negative tone)**	**Overall ease of use (positive tone)**	**Efficiency (negative tone)**	Response
1.89%	56.60%	0.00%	54.72%	1
0.00%	13.21%	0.00%	22.64%	2
0.00%	7.55%	0.00%	3.77%	3
13.21%	13.21%	13.21%	11.32%	4
15.09%	5.66%	24.53%	1.89%	5
16.98%	1.89%	11.32%	3.77%	6
52.83%	1.89%	50.94%	1.89%	7

Table 17. Overall UMUX scores regarding the "Manage classrooms and associate designs for enactment" functionality.

Pilot	Number of answers	Average UMUX Score
CUB	19	63.60
UNIWA	8	73.44
CUP	9	63.89
URJC@URJC	5	70.00
URJC@UVA	12	66.32
TOTAL	53	

Table 18. UMUX scores per pilot regarding the "Manage classrooms and associate designs for enactment" functionality.

4.9 Instructions for enactment

Tables 19 and 20 summarise the quantitative data gathered in relation with the "Instructions for enactment" functionality. The average score (53 responses) is 64,70 (in a 0-100 scale), that corresponds to the adjective "OK" (Bangor et al., 2009). 15 answers to the open-ended question about this functionality were provided, indicating:

- Only 3 comments (20%) were positive opinions. Indeed, 6 comments (40%) point to a software bug that happened during the CUB and UNIWA pilots. For instance: "*The student view doesn't work at all. It just generates a weird design with lots of HTML code and SQL queries*" (CUB) or "*When I clicked to show me the activity as a student it gave me an error*" (UNIWA). Indeed, the UMUX score from the CUB pilot (19 participants) was the lowest one. This software bug was solved before the CUP and URJC pilots, which might explain why the UMUX scores were better, especially in the URJC ones (see Table 20).
- 5 more comments from the CUP and URJC participants make suggestions for improvements and point to some minor "bugs" that were incorporated to the list of Appendix D.

INSTRUCTIONS FOR ENACTMENT			AVERAGE	64.70
			SD	15.17
				N=53
Effectiveness (positive tone)	Satisfaction (negative tone)	Overall ease of use (positive tone)	Efficiency (negative tone)	Response
5.77%	51.92%	1.92%	55.77%	1
1.92%	19.23%	0.00%	21.15%	2
1.92%	7.69%	0.00%	1.92%	3
9.62%	13.46%	13.46%	15.38%	4
7.69%	1.92%	9.62%	1.92%	5
21.15%	0.00%	21.15%	0.00%	6
51.92%	5.77%	53.85%	3.85%	7

Table 19. Overall UMUX scores regarding the "Instructions for enactment" functionality.

Pilot	Number of answers	Average UMUX Score
CUB	19	60.09
UNIWA	8	69.27
CUP	9	63.89
URJC@URJC	5	70.83
URJC@UVA	12	67.01
TOTAL	53	

Table 20. UMUX scores per pilot regarding the "Manage classrooms and associate designs for enactment" functionality.

4.10 Overall perception

Table 21 summarises the SUS scores calculated from the answers to the final usability questionnaire about the FERTILE CP as a whole (see appendix C). The overall average score, 68.3, corresponds to the adjective "OK". However, it is interesting to pay attention to the SUS scores per pilot.

Pilot	**Number of answers**	**Average SUS Score**
CUB	19	61.4
UNIWA	8	88.4
CUP	9	55.4
URJC@URJC	5	70.5
URJC@UVA	12	77.7
TOTAL	**53**	**68.3**

Table 21. Average SUS scores per pilot and in general.

CUB and CUP participants rated the FERTILE CP with an average SUS score of 61.4 and 55.4, respectively ("OK", being the lower limit for this category 50.9). One possible explanation, also based on the negative aspects raised by them (see Appendix E) is that participants in these pilots suffered from software bugs that affected the translation of parts of the user interface, as well as the incorrect saving of edited designs. Many of these problems were addressed before the URJC@URJC and URJC@UVA pilots, which might explain the higher scores (70.5 and 77.7 respectively, "GOOD"). However, it is surprising the high score given by the participants of the UNIWA pilot (88.4, "EXCELLENT"), who also experienced the "saving" bug and some translation issues. The gathered data cannot explain this very positive assessment for the UNIWA pilot.

Looking at the specific characteristics of the pilots, one possible speculation is that UNIWA, URJC@UJRC, and URJC@UVA employ 2 hours of synchronous explanation about the FERTILE CP, while CUP and CUB only devote 20 min. (and not in all cases) to the presentation of the platform (see Table 2). This might suggest actions to take during the future training events of the project: devote more synchronous (preferably in face-to-face mode) time to the explanation of the FERTILE CP features and/or improve the explanations of the training material for those cases in which the first contact of the participants with the platform relies solely on the use of those materials (videos and worksheet). Another possible speculation is that the pilot of UNIWA was the first one implemented and the participants, who were students in an MSc course about Digital transformation in education, were aware that they were involved in a 'debugging' procedure, part of the software development cycle of the platform. The experience was worthy for them as they had also experience in designing projects in more traditional ways. Thus, they could appreciate the affordances of the Community Platform while designing projects despite the bugs. Moreover, the immediate response of the development team to their requests made them feel confident that it was a matter of time to improve.

The SUS questionnaire included two open-ended questions in which participants were asked to underline the positive and negative aspects of the FERTILE CP (see Appendix C). Regarding the "positive aspects", participants highlighted the support to collaboration, the support to interdisciplinarity, the support to ideation/conceptualisation and to the actual design process, the support to enactment, and the simplicity and ease of use of the platform (see Appendix E).

On the contrary, and regarding the "negative aspects" of the platform, some comments suggested the lack of novelty of the platform, some recommended the support for synchronous editing, and underlined the complexity of the design process (also linked to the FERTILE Design Methodology). Several comments also identified software bugs (also pointed out in the UMUX questionnaires) and made suggestions for the improvement of some of the functionalities. Again, Appendix E contains all the provided comments, groups under thematic categories, also indicating in which pilots those comments were generated.

5. Discussion and Next Steps

This report has described the process followed to develop the FERTILE CP v1.0 and how it was evaluated. As depicted in Figure 1, in the introductory section, the development process included a structured requirements elicitation process at the consortium level, together with a direct conversation with the project coordinator (UNIWA, partner also responsible for the FERTILE Design Methodology, the core conceptual contribution of the project). After the Athens TPM, the FERTILE pilots were carried out along a period of five months, enabling an almost continuous process of improvements to the platform (both solving software bugs and incorporating suggestions for subsequent pilots) that resembles those advocated by agile software methodologies. The effect of this process of continuous improvements was reflected during the URJC pilots (the ones that were carried out the latest), whose participants seemed to have a more positive attitude towards the FERTILE CP.

The analysis of the evaluation data gathered during the FERTILE training pilots suggests that the FERTILE CP v1.0 can be used by teachers outside the FERTILE consortium to create Artful ER projects following the FERTILE Design Methodology. Indeed, all quantitative UMUX and SUS scores are above the "OK" category and all individual functional features received positive comments from the participants. Nonetheless, those quantitative results varied among pilots. One possible explanation for that variation might rely on the evolution of the software of the FERTILE CP. For instance, UNIWA, CUP and CUB participants experienced some significant "bugs" (particularly one related with the incorrect saving of designs, as well as some translation issues) that were solved before the URJC pilots. Also, the amount of synchronous face-to-face time devoted to the presentation and explanation of the FERTILE CP to the participants might have also influenced the results (although this relationship cannot be confirmed by the evaluation data).

The pilots were also very useful for the identification of lots of minor software bugs and usability issues that were systematically collected by UVA and continuously addressed (see Appendices B and D). They all are expected to be solved for the next release of the platform (v2.0).

In any case, the FERTILE CP v1.0 received multiple positive comments in relation to its community-support capabilities, the help provided during the design process (especially interesting is the support for "ideation"), its simplicity and ease of use, and the support for the enactment of the designs with students. Obviously, many of the results from this evaluation can be related to the FERTILE Design Methodology (FDM), since the design support provided by the CP is directly linked with it.

The lessons learnt from this evaluation, together with the list of identified software bugs and suggestions, are currently being applied to the development of an improved version of the FERTILE CP (v2.0) that will be employed during the higher-scale "multiplier events" that will take place during the rest of the FERTILE project. Some of those lessons can also be applied to the way new evaluation cycles should be carried out. UMUX and SUS, together with some simple

open-ended questions, have proven very useful for gathering information about the perception of the users. However, additional data sources might be needed to explain some of the results (see, e.g., the difficulties to explain the differences of the results among pilots). Interviews to the trainers of the training events, as well as "focus groups" with selected subgroups of the participants (per pilot) might shed more light on some of the quantitative results and might be considered for the design of future evaluations of the FERTILE CP.

During the 5th Transnational Project Meeting that took place in Bratislava (Slovakia), 23rd and 24th of May, 2024, the FERTILE project partners discussed the evaluation results presented in this report and agreed on three main aspects about the future of the FERTILE CP: to solve the identified software bugs, to complete the functionality of "Community Analytics", and to add a way to mark some projects as "exemplars" that might be used by new members of the FERTILE CP as a starting point for their design activities. Since that TPM, the UVA team has implemented those three action points. Significantly, and for the sake of completeness (although it could not be used during the pilots), the recently implemented "Community Analytics" functionality is described in detail in Appendix F. Similarly, Appendix G describes the recently added functionality of "Project Analytics" that further contributes to the provision of the design summary to the users of the platform (see "Visualise summary of Artful ER projects" functional requirement in D2.1).

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LIST OF ACRONYMS

CP: Community Platform

CT: Computational Thinking

ER: Educational Robotics

FCP: FERTILE Community Platform

FDM: FERTILE Design Methodology

ILDE: Integrated Learning Design Environment

LD: Learning Design

SUS: System Usability Scale

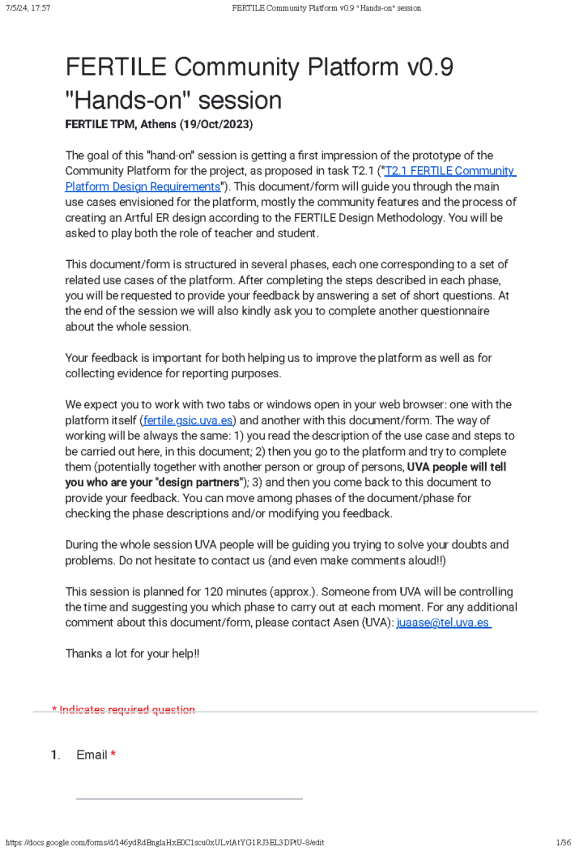
TEL: Technology-Enhanced Learning

TPM: Transnational Project Meeting

UMUX: Usability Metric for User Experience

APPENDIX A. STEP-BY-STEP WORKSHEET FOR FERTILE CP V0.9

The following step-by-step worksheet was employed, during the Athens Transnational Project Meeting (19th of October, 2023), for guiding the testing of the FERTILE CP v0.9 by FERTILE project members. This worksheet also illustrates the functional features implemented in this version of the FERTILE CP.



7/5/24, 17:57 FERTILE Community Platform v0.9 "Hands-on" session

FERTILE Community Platform v0.9 "Hands-on" session

FERTILE TPM, Athens (19/Oct/2023)

The goal of this "hand-on" session is getting a first impression of the prototype of the Community Platform for the project, as proposed in task T2.1 ("T2.1 FERTILE Community Platform Design Requirements"). This document/form will guide you through the main use cases envisioned for the platform, mostly the community features and the process of creating an Artful ER design according to the FERTILE Design Methodology. You will be asked to play both the role of teacher and student.

This document/form is structured in several phases, each one corresponding to a set of related use cases of the platform. After completing the steps described in each phase, you will be requested to provide your feedback by answering a set of short questions. At the end of the session we will also kindly ask you to complete another questionnaire about the whole session.

Your feedback is important for both helping us to improve the platform as well as for collecting evidence for reporting purposes.

We expect you to work with two tabs or windows open in your web browser: one with the platform itself (fertile.gsic.uva.es) and another with this document/form. The way of working will be always the same: 1) you read the description of the use case and steps to be carried out here, in this document; 2) then you go to the platform and try to complete them (potentially together with another person or group of persons, **UVA people will tell you who are your "design partners"**); 3) and then you come back to this document to provide your feedback. You can move among phases of the document/phase for checking the phase descriptions and/or modifying you feedback.

During the whole session UVA people will be guiding you trying to solve your doubts and problems. Do not hesitate to contact us (and even make comments aloud!!)

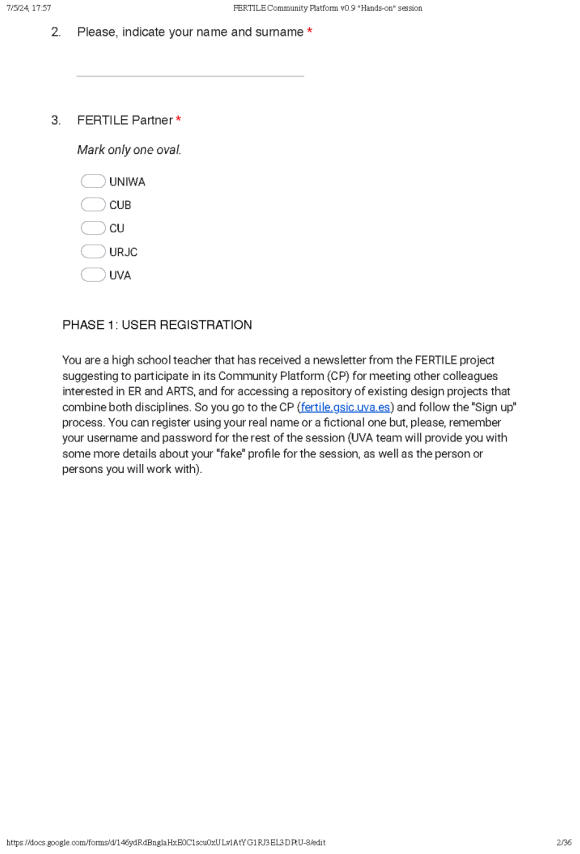
This session is planned for 120 minutes (approx.). Someone from UVA will be controlling the time and suggesting you which phase to carry out at each moment. For any additional comment about this document/form, please contact Asen (UVA): juaase@tel.uva.es

Thanks a lot for your help!!

* Indicates required question

1. Email *

https://docs.google.com/forms/d/146ydRdBnglaHxE0C1scu0xULvtAtYG1RJ3EL3DPU-8/edit 1/36



7/5/24, 17:57 FERTILE Community Platform v0.9 "Hands-on" session

2. Please, indicate your name and surname *

3. FERTILE Partner *

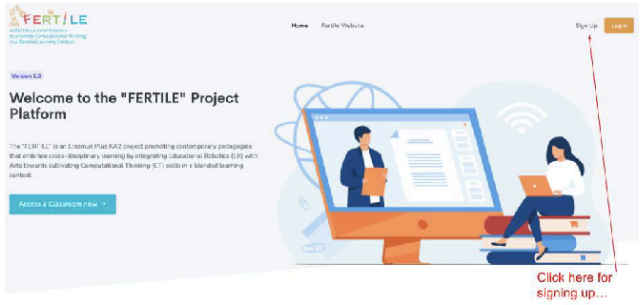
Mark only one oval.

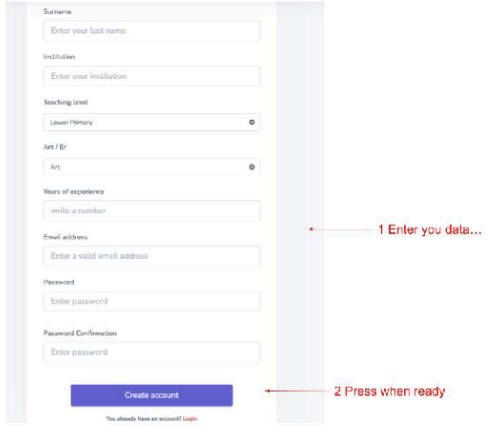
- UNIWA
- CUB
- CU
- URJC
- UVA

PHASE 1: USER REGISTRATION

You are a high school teacher that has received a newsletter from the FERTILE project suggesting to participate in its Community Platform (CP) for meeting other colleagues interested in ER and ARTS, and for accessing a repository of existing design projects that combine both disciplines. So you go to the CP (fertile.gsic.uva.es) and follow the "Sign up" process. You can register using your real name or a fictional one but, please, remember your username and password for the rest of the session (UVA team will provide you with some more details about your "fake" profile for the session, as well as the person or persons you will work with).

https://docs.google.com/forms/d/146ydRdBnglaHxE0C1scu0xULvtAtYG1RJ3EL3DPU-8/edit 2/36





Once you have completed the registration process, you will be redirected to the home page of the Community Platform (Welcome!!!). You can edit your profile by clicking in the top-right part of the screen (try it!):

4. Please, rate your level of agreement with the following sentence: *

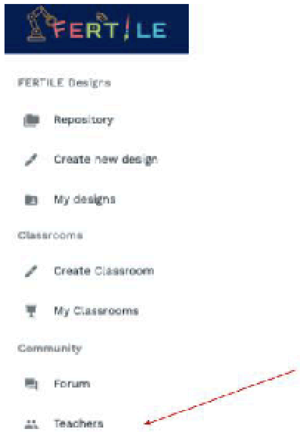
Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
"I think the User Registration functionality may fulfil the expectations of teachers using the Community Platform"	◯	◯	◯	◯	◯

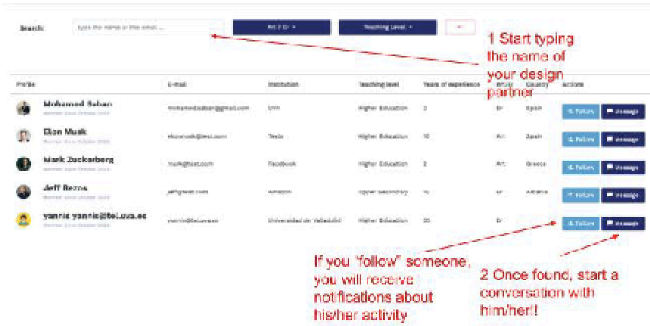
5. Please, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

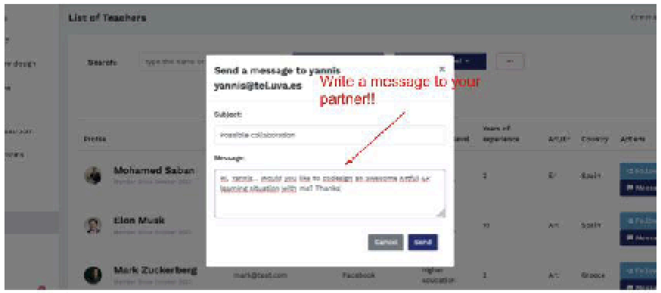
PHASE 2: LIST, SEARCH FOR, AND SEND MESSAGES TO TEACHERS

You are now part of the FERTILE COMMUNITY!!! As you can see, the 'home page' of the platform has a toolbar on the left part of the screen. This is the main way of navigating through the platform. Lets start by the 'Teachers' functions:

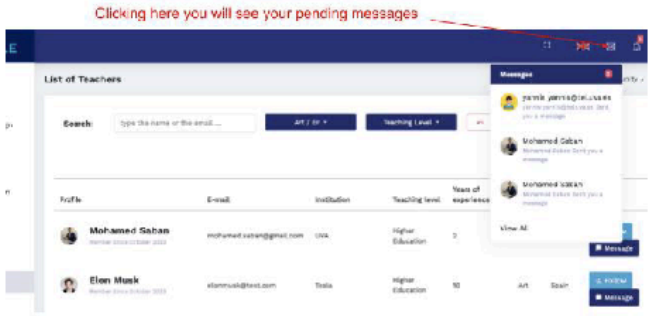


What you get is a list of all the users (teachers) that are registered in the Community Platform. You can, for instance, search them by name, 'follow them' and even start a conversation with them. Try to search for the teacher you are going to work with (UVA team will tell you who is that person) and start a conversation with him/her. These are the steps:

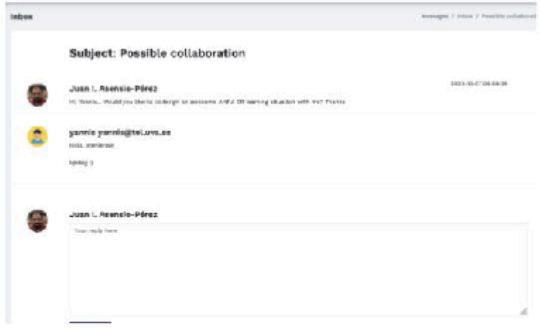




The top toolbar of the Community Platform will inform you about the reception of messages:

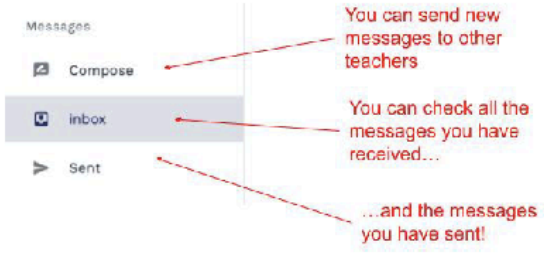


Clicking on one of the messages, you can access the whole conversation with that teachers:



If you want to see all your messages, you can click on 'Inbox' in the main toolbar:

7/3/24, 17:37 FERTILE Community Platform v0.9 - Heads-on session



https://docs.google.com/forms/d/1 46ydRdBejleHxBDCIsculbULMAtYGIRJBLJDPtU-B/edit 8/16

6. Please, rate your level of agreement with the following sentences: *

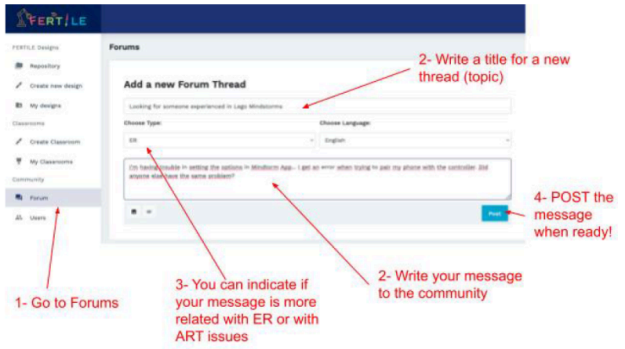
Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I think the way the list of users is displayed may fulfil the expectations of teachers using the Community Platform	◯	◯	◯	◯	◯
I think the way users can be searched may fulfil the expectations of teachers using the Community Platform	◯	◯	◯	◯	◯
I think the way messages can be exchanged among teachers may fulfil the expectations of teachers using the Community Platform	◯	◯	◯	◯	◯

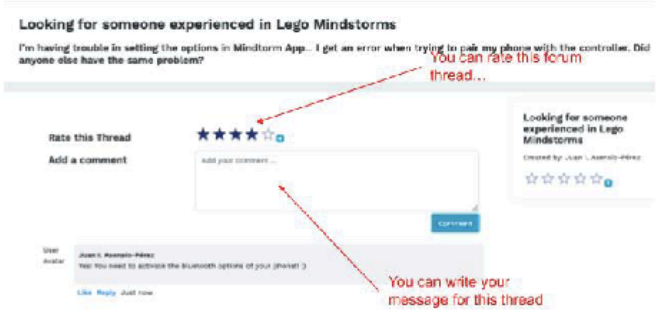
7. Please, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

PHASE 3: CREATE AND PARTICIPATE IN FORUMS

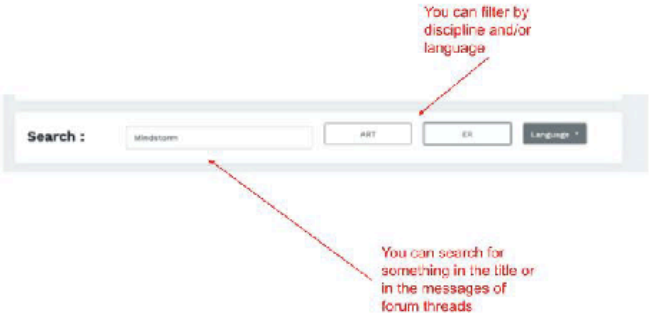
In addition to one-to-one message, the Community Platform provides a many-to-many way of communication: FORUMS. You can find that options in the main toolbar (on the left). Go to FORUMS and agree with your design partner(s) who is going to create a Forum Thread (a topic) and who is going to post messages to it. You can engage in an asynchronous conversation or even participate in the forums of other design teams during the session!



Forums can be rated, and you can also reply to and/or "like" messages posted in forums. Try to rate the forum created by your partners, post a message, and reply to another one posted by your partner.



You can also search and/or filter existing forums, thus making it easier to find the forums that are interesting even if the number of existing forums is large. Try it!



8. Please, rate your level of agreement with the following sentences: *

Mark only one oval per row.

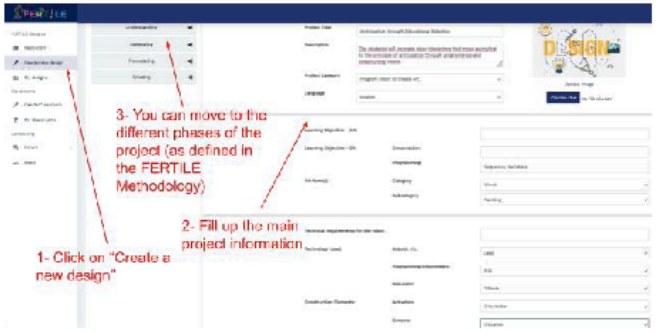
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I think the way the forum threads are created may fulfil the expectations of teachers using the Community Platform	◯	◯	◯	◯	◯
I think the way forums are rated may fulfil the expectations of teachers using the Community Platform	◯	◯	◯	◯	◯
I think the way can be searched and/or filtered may fulfil the expectations of teachers using the Community Platform	◯	◯	◯	◯	◯

9. Please, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

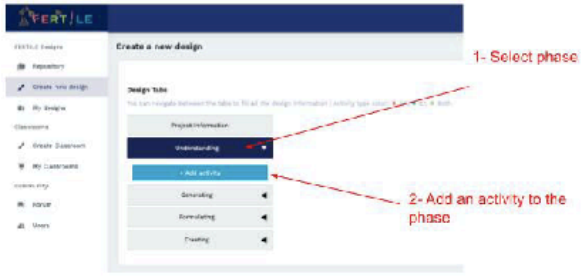
PHASE 4: CREATING A DESIGN

Once we have checked the main 'Community' features (Users and Forums), let's move on and try the most FERTILE-specific feature of the Community Platform: **creating a new Artful ER design**. In this phase we will concentrate on creating, individually, a sample design project. The following phases will illustrate how to publish it, share it, etc... But, again, this phase will involve only individual work. We all are going to create the same sample design project, using this sample as the starting point (thanks!, Maria). But we will only implement the description of the project... and the first two activities of the 'Understanding' phase.

You first need to go to the 'Create new design' option of the main toolbar (IMPORTANT NOTE: all changes are saved 'on the fly'... you can also undo or redo your changes). If you want, you can add your name, or any other differentiating information, to the title of the project... This way, it will be easier for you to locate your design in the platform:



You can now start creating learning activities in the different phases of the project (the phases of the 'FERTILE methodology'). You can 'navigate' across the phases or go back to the overall project information. For instance, let's create an activity for the 'Understanding' phase:



Now, why don't you try to add another activity? You can add it to the 'understanding' phase or to any other. Once you finish editing the design project, you can save and exit the editor (you will be taken to the 'My Designs' page)

10. Please, rate your level of agreement with the following sentences: *

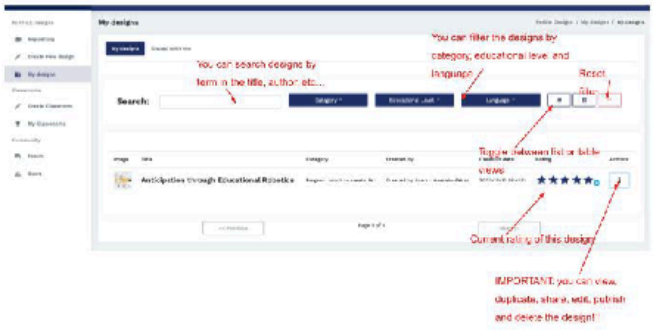
Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I think that the "tree like" representation of the phases and activities of a design project is appropriate for teachers	◯	◯	◯	◯	◯
I think that the process of creating a design project reflect what is defined in the FERTILE Methodology	◯	◯	◯	◯	◯

11. Please, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

PHASE 5: LIST, SEARCH, FILTER, COMMENT, AND RATE DESIGN PROJECTS

There are two places in which you can list, search, and filter design projects: the 'My Designs' page, and the 'Repository' page. In the 'My Designs' page only designs created by you (or shared with you, we will talk about this later) will be listed. In the 'Repository' page ALL designs created in the platform can be found (in the current version of the platform all created designs are visible for all the teachers... in the next version the creators of a design will have the opportunity to keep it 'secret'). Both pages are almost identical, so you can go to 'My Designs' and take a look, testing the searching and filtering options. In the 'Actions' menu (see screenshot below) you can find the available options for you with a particular design. For instance, in 'My Designs' you have available the option of 'Edit' the design... but this is not the case in the page 'Repository' if you check the available options for the design created by your design partner (try it!):



If you click on a design (or select the action 'view') you will be able to look into a design (yours or someone elses design). It is a kind of 'read only' view of the design. Interestingly, you can post your comments about the design, or even rate it!!. Therefore, go to the 'Repository', locate the design created by your design partner (by search or by filtering), 'show it', and post a comment.

13. Plase, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

PHASE 6: SHARE AND REUSE DESIGNS

It is time now to share your designs with your partners. This way, the same design can be edited by more than one teacher (although NOT AT THE SAME TIME). To do so, you can go to 'My Designs' and, for the design you want to share, click on 'Actions' and select 'Share'. Then, search for the Teachers you want to share the design with, indicating if you want to share it with editing rights

Now, this design should appear in the list of 'My Designs' of your partner... under the tab 'Shared with me'. Can your partner see it? Can (s)he edit the design? (NOTE: the same design cannot be edited by more than one teacher at the same time. If a design is being edited it will be 'blocked' until saved by the current editing teacher or, in case of inactivity, after 15 minutes).

The Community Platform also gives you the opportunity of reusing designs proposed by other teachers (not needing to be a co-designer to do so). In this case, a copy (or 'duplicate') of the original design will be made and will be assigned to 'My Designs', so that you can make your own changes. To do so, you can go to 'Repository' and, for the design you want to reuse, click on 'Actions' and select 'Duplicate'. The duplicated design will appear now in 'My Designs' (you can now edit it and, for instance, change the title).

14. Please, rate your level of agreement with the following sentences: *

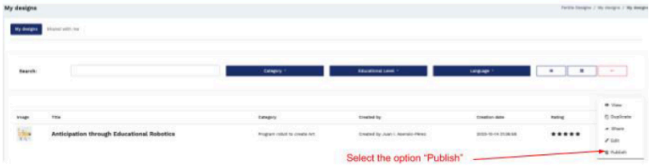
Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I think the way design projects can be shared with others may fulfil the expectations of teachers using the Community Platform	◯	◯	◯	◯	◯
I think the way design projects can be reused (duplicated) may fulfill the expectations of teachers using the Community Platform	◯	◯	◯	◯	◯

15. Plase, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

PHASE 7: PUBLISH DESIGNS

The idea of "publishing designs" consists of making your designs available to Teachers that are not members of the FERTILE Community Platform (i.e., they are not registered in the platform). If you publish your designs, they will be accessible by anyone using the URL provided by the platform. To do so, you can go to "My Designs" and, for the design you want
to "publish", click on "Actions" and select "Publish":



Once you have published the design, if you click on "Actions" again you will see that two new options appear: "Unpublish" and "Copy Link". The latter provides you with the link by means of which the design can be accessed from outside the Community Platform. Try it!, click on "Copy Link", open a new tab in your web browser, and paste it... What can you see? Of course, if you want to stop allowing external teacher to access (in a read mode only) your design, you can simply "Unpublish" it...

16. Please, rate your level of agreement with the following sentences: *

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I think the way design projects can be "publish" may fulfil the expectations of teachers using the Community Platform	◯	◯	◯	◯	◯

17. Please, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

PHASE 8: MANAGE CLASSROOMS AND ASSOCIATE DESIGNS FOR ENACTMENT

Let's imagine that you, as a teacher, have completed a design project and you want it to be enacted by one cohort of your students at the school. In this case, you need to create a "Classroom" in the platform. If you want the same design to be enacted by another cohort of students (in the same or different school), you need to create a different classroom, and so on. You can assign more than one design project to the same classroom (e.g., you create a design for the first month of the semester and another design for the fourth month... both designs for the same cohort of students). Summing up, you will typically need to follow the same steps:

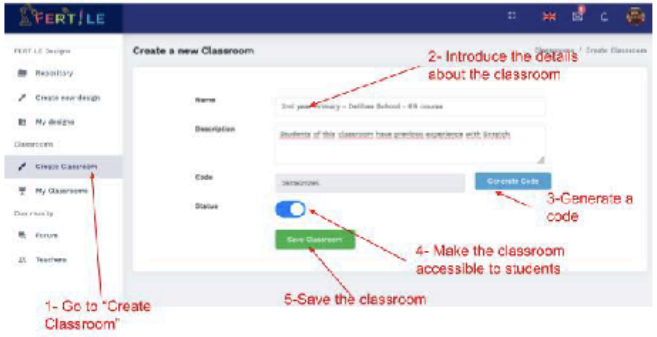
1. Create a classroom
2. Assign one or more designs to the classroom
3. Provide your students with the code to enter the classroom

You have two ways of allowing your students to access the "classroom" in the FERTILE platform (students don't need to register!):

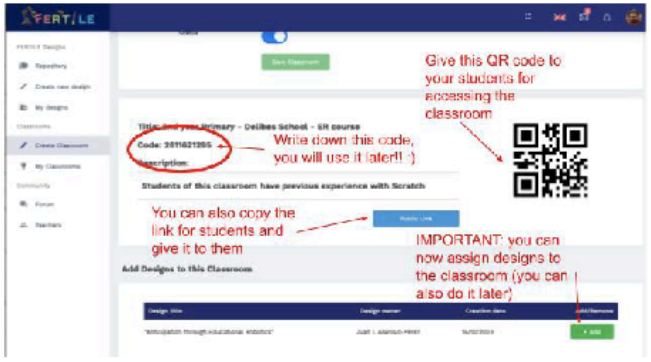
1. By providing them with a QR code or a URL generated by the platform (this way, the students can scan the QR code and will automatically be taken to the "classroom").
2. By providing them with a numerical code (in this case, the students simply need to go to https://fertile.gsic.uva.es/classroom and enter that code.

In both cases, the students need to indicate their real name (or alias) that they will use while interacting with the platform. Another interesting feature is that teachers can, at any time, request the FERTILE platform to regenerate the QR or numerical code for accessing one particular classroom. In this way, if the teacher detects that someone is not making an appropriate use of the classroom, s/he can regenerate the code and not provide it to that person.

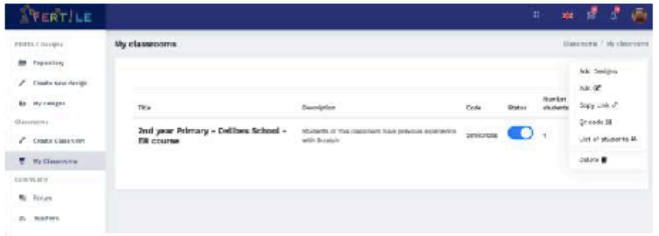
You can now create your own classroom and assign one of your designs to it:



After 'saving' the classroom, you can see now the QR code that would give direct access to the classroom (you can scan it with your mobile device and see what happens!). Similarly, you can press the 'Public link' button and the URL for accessing the classroom will be copied (you can paste it in a new tab of your browser and see what happens). **You can also see the NUMERICAL CODE that grants access to the classroom (WRITE IT DOWN, since you will use in the next phase).** Finally, and this is VERY IMPORTANT, you can assign one or several of your designs to the classroom. Do not forget to do that (otherwise, the students will find an 'empty' classroom when accessing).



At any time, you can change the above settings by going to the 'My Classrooms' page... If you click in the 'Actions' associated to a classroom, you can add more designs, edit the setting of the classroom, obtain the QR code or the link of the classroom, and, interestingly, you can access the 'List of students' (if you just created the classroom, it will be empty... we will come back to this later):



18. Please, rate your level of agreement with the following sentences: *

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I understand the concept of Classroom and its purpose	◯	◯	◯	◯	◯
I think the concept of Classroom will be easily understood by the teachers using the Community Platform	◯	◯	◯	◯	◯
I think the way Classrooms are created may fulfil the expectations of teachers using the Community Platform	◯	◯	◯	◯	◯

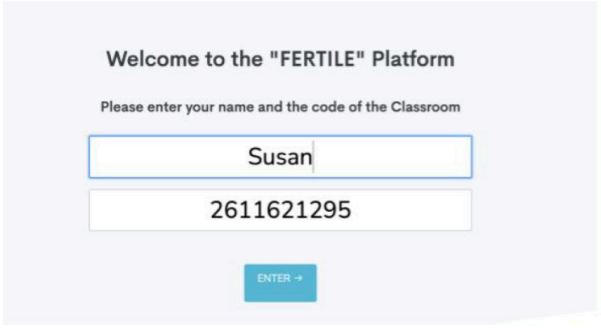
19. Plase, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

PHASE 9: THE STUDENTS' VIEW (INSTRUCTIONS FOR ENACTMENT)

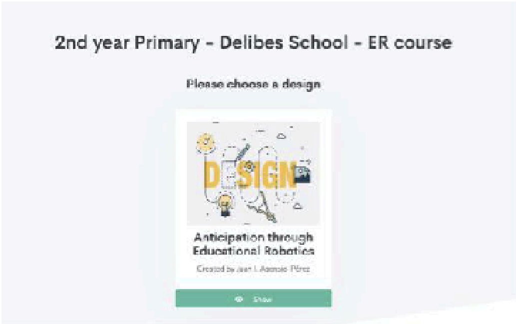
AT LAST!!! Now it is time for students to access and use the awesome Artful ER designs you (as teacher) have created. As explained in the previous phase, students have two options to access a classroom (depending on the information provided by the teacher):

1. Accessing via QR code or public link
2. Going to https://fertile.gsic.uva.es/classroom and entering a numerical code

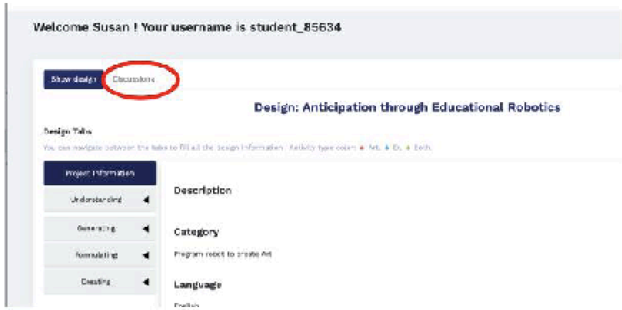
Let's illustrate the second one. **NOW YOU ARE PLAYING THE ROLE OF A STUDENT!!** Open a "private windows" of your browser (or use a different browser) and go to https://fertile.gsic.uva.es/classroom. You can then enter the name of a fictitious student (Susan, in the example below) and the numerical code that was generated when creating the classroom in the previous phase:



After clicking "Enter", the student gets a list of the designs available in that classroom. The student can then click on "Show" and access a "read-only" view of the design that s/he can browse (accessing, for each activity, the "instructions for students" as reflected in the PDF worksheets).



The students can also access the 'Discussion' tab for exchanging messages with the teachers and the other students:



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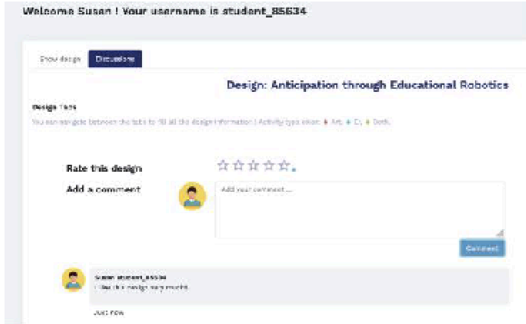
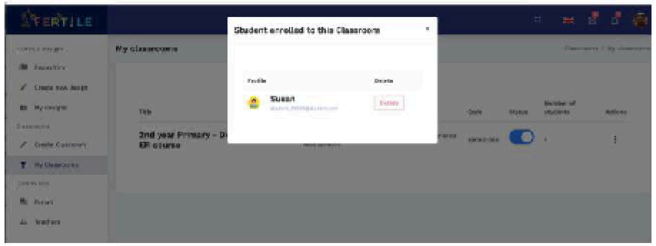


If you go back to your original browser window (in which you were playing the role of teacher), you can click on 'My Classrooms', click on 'Actions', and then select 'List of Students'. If you do so, you will have the possibility of managing the students that have accessed to the classroom and 'remove' them from the classroom if they are 'misbehaving':



20. Please, rate your level of agreement with the following sentences: *

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The way students can access the classroom is appropriate	◯	◯	◯	◯	◯
I think the way students can exchange messages about a design is appropriate	◯	◯	◯	◯	◯
I think the way the students that accessed a classroom can be managed (e.g., deleted) may fulfil the expectations of teachers using the Community Platform	◯	◯	◯	◯	◯

21. Plase, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

OVERALL QUESTIONS

Great! You have now tried all the main functionalities of the FERTILE Community Platform. We would appreciate if you could complete the following 10 questions (considering the Community Platform as a whole):

22. Please, rate your level of agreement with the following sentences: *

Mark only one oval per row.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I think that I would like to use the FERTILE Community Plaform frequently					
I found the FERTILE Community Platform unnecessarily complex					
I thought the FERTILE Community Platform was easy to use					
I think that I would need the support of a technical person to be able to use the FERTILE Community Platform					
I found that the various functions in the FERTILE Community Platform were well integrated					
I thought that there was too much inconsistency in the FERTILE Community Platform					
I would imagine that most people would learn to use the FERTILE Community Platform very quickly					
I found the FERTILE Community Platform very awkward to use					
I felt very confident using the FERTILE Community Platform					
I needed to learn a lot of things before I could get going with the FERTILE Community Platform					

LAST REMARKS AND THANK YOU!!

Thank you very much for your help and feedback. It is most valuable!!! To finish this (rather long) questionnaire, we have two last questions for you. THANKS!!!!

23. Please, after having tested the platform, and according to your opinion, ¿what are the two most POSITIVE aspects of the FERTILE Community Platform?

24. Please, after having tested the platform, and according to your opinion, ¿what are the two most NEGATIVE aspects of the FERTILE Community Platform?

Appendix B. Software Bugs and Suggestions for FERTILE CP v0.9

The following table lists the software bugs and the functional limitations identified by the FERTILE partners that participated in the testing session that took place during the Athens TPM that took place on October 19th, 2023.

Bug and Suggestions
Add trashed designs option
Show the designs of each classroom
Add Action button to the designs list
Sharing a design with various users
Add email verification and password recovery
Add help messages to the options and buttons
Add hovers to CP elements
Co-owners table! When sharing a design
Visibility of designs in the repository
Add shared with column in my designs tab, (When hover : see a tooltips with the name of users)
Contextual help (tool-tips)
Add icon for “additional info” (tool-tips)
Avoid user reloading of pages for updating notification indicators
Pagination for lists
Configuration of mail-based notifications by teachers (messages, forums, shared designs, etc...) - Initially one checkbox for all types of notifications
Trash bin for designs (recover deleted designs?) -> Review bug=> deletion permanently...
Logging system
Translation system

Activation of confirmation via e-mail
Password recovery via e-mail
Profile: education level (more than one, similarly to CT skills)
Check if name of the user can be modified
Check that profile photo can be changed when editing the profile
Add language(s) of teachers
Add filtering per language(s) (of the teacher, not of the browser)
Column with number of designs, average rating, and number of followers. Remove years of experience, email, institution
Er -> ER (and, if possible, contextual help indicating that it is “Educational Robotics”)
Notifications should disappear from the list when clicked…
Check consistency of “envelope” and “bell” with actual events
Remove separation between Inbox and Sent messages. Group all messages (in and out) in a same thread
Compose new message: add “Done” button to the pop-up window in which recipients are selected => Check bug in list of users (divs)
Link to user messages? (i.e., you can paste a URL to the message in social media or similar)
Use “@” to make reference to another user (as in X/Twitter)
Sending notifications via email
Check what happens when there are more than one “conversation” with the same subject
Show who created a thread (and when) and who last posted (and when)

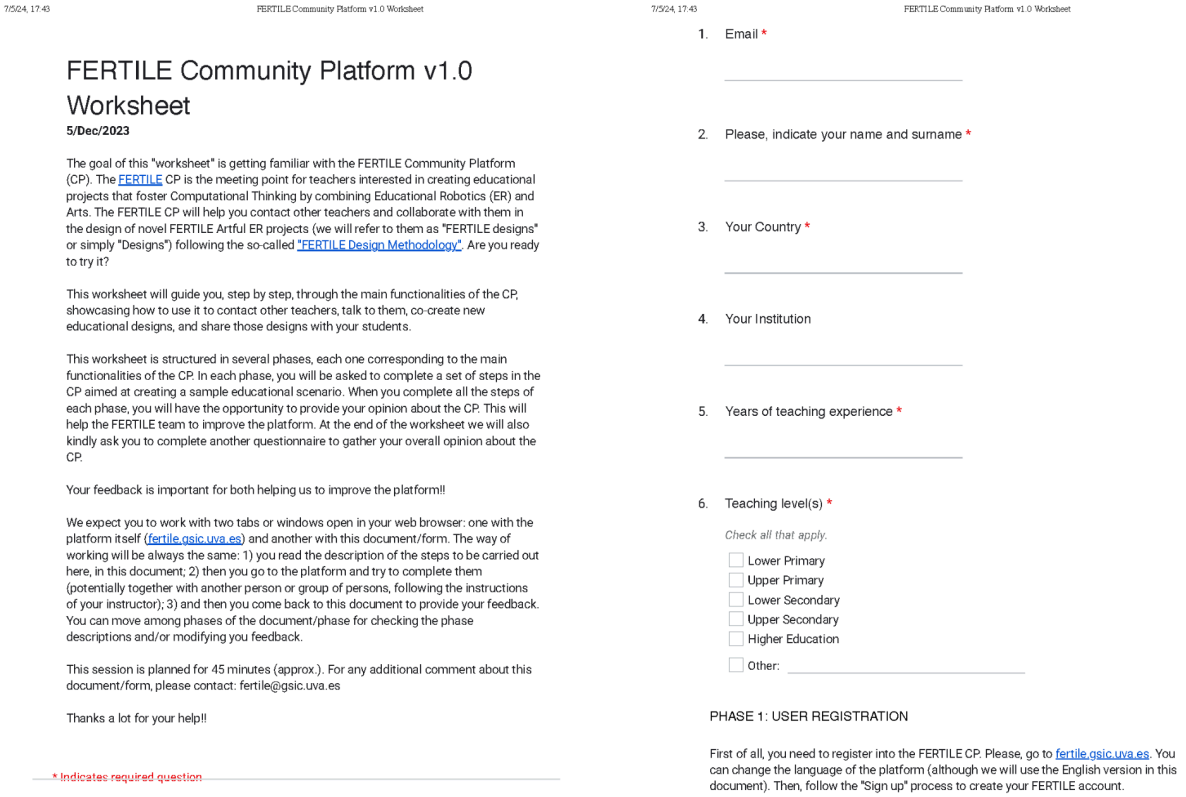
Forum page layout: the “creation of new thread” does not allow the user to see the list of threads. Create new threads with a button? (and a pop-up form)
Add a control to change the chronological order
Check filtering of forums
Sending notifications via email
Input box of replays below previous replays (not above, as it is now)
Check options in menus (“...”) -> Sharing... Also, check that edit option appears in the menu of a shared design
Add N/A to all drop down menus as an option
Check that searching of designs in the repository works properly
Add “Save” button for saving work while editing (even though it is already automatically saved) - open to discussion
Preview of design (instructions for students) while designing - new tab
Add a button for making a design “public” to the community (designs should be “private” by default) ● Change name: “(Community) Visibility”
Two forums per design: one for co-designers (only for them -> “internal discussion”) and another for everyone in the community (if the design is “open” -> “public discussion”). Different tabs for each one of them Two tabs: Private discussions / Public discussions
Check behavior of duplication when a design is shared without editing rights (potential bug)
Use Rich text editor for the description of the design (as an alternative way of displaying the instructions to students, instead of the worksheet PDF)
Add information of co-editors of a design (maybe a number with a tool-tip showing the names) ● In “my designs” table -> replace “Created by”

with “Shared with”. If no co-designers => “None”. If more than 1, e.g., “Mohamed Saban + 3” (and use tooltip for listing all users sharing the design).
Allow more than one option for Art forms… but also for all elements of “Technical Requirements for the Robot” and “Educational Level” For Art Form, more than one combination of “category” + “subcategory” IMPORTANT-> Category+Subcategory go together… => only one “+” button…
Document from Maria with proposal for “hovers” (per “phase”) and one small table with a short description of each phase (static) as a kind of explanation/help for teachers…
Add information of creator(s) and date => add the information to the “published page”
In the view of the repository, the action of “copying link” does not work (check!)
Add/Remove designs works well from “actions” but not while creating the classroom (not all available designs appear in the list) - Check!
CHECK STUDENT VIEW
Add a button for disabling the forum during the enactment of a design (this might be interesting for primary education) Add button for activating/deactivating forum for students -> available from the “Manage classroom” window
When entering a classroom, display a message indicating: “You have joined the classroom…”
Check download button for students
Move management of students to the classroom itself (i.e., after “entering the classroom” and not from the list of classrooms)
Not showing the phase of the design when they do

not have activities inside
Only show to the students the title, the duration, the description (if any, rich text), and the worksheet PDF (if any)
Separate forum/discussion from rating
Separate rating for students (visible from the “enactment”) different from the rating of the teachers (visible from the platform)

APPENDIX C. STEP-BY-STEP WORKSHEET FOR FERTILE CP V1.0

The following step-by-step worksheet was employed, during the FERTILE training pilots (Dec. 2023 to April 2024), for gathering evaluation data about the FERTILE CP v1.0 (see section 3.1). This worksheet also illustrates the functional features implemented in this version of the FERTILE CP and is employed as training material for the participants in the pilots.



7/5/24, 17:43 FERTILE Community Platform v1.0 Worksheet

FERTILE Community Platform v1.0 Worksheet

5/Dec/2023

The goal of this "worksheet" is getting familiar with the FERTILE Community Platform (CP). The FERTILE CP is the meeting point for teachers interested in creating educational projects that foster Computational Thinking by combining Educational Robotics (ER) and Arts. The FERTILE CP will help you contact other teachers and collaborate with them in the design of novel FERTILE Artful ER projects (we will refer to them as "FERTILE designs" or simply "Designs") following the so-called "FERTILE Design Methodology". Are you ready to try it?

This worksheet will guide you, step by step, through the main functionalities of the CP, showcasing how to use it to contact other teachers, talk to them, co-create new educational designs, and share those designs with your students.

This worksheet is structured in several phases, each one corresponding to the main functionalities of the CP. In each phase, you will be asked to complete a set of steps in the CP aimed at creating a sample educational scenario. When you complete all the steps of each phase, you will have the opportunity to provide your opinion about the CP. This will help the FERTILE team to improve the platform. At the end of the worksheet we will also kindly ask you to complete another questionnaire to gather your overall opinion about the CP.

Your feedback is important for both helping us to improve the platform!!

We expect you to work with two tabs or windows open in your web browser: one with the platform itself (fertile.gsic.uva.es) and another with this document/form. The way of working will be always the same: 1) you read the description of the steps to be carried out here, in this document; 2) then you go to the platform and try to complete them (potentially together with another person or group of persons, following the instructions of your instructor); 3) and then you come back to this document to provide your feedback. You can move among phases of the document/phase for checking the phase descriptions and/or modifying you feedback.

This session is planned for 45 minutes (approx.). For any additional comment about this document/form, please contact: fertile@gsic.uva.es

Thanks a lot for your help!!

* Indicates required question

7/5/24, 17:43 FERTILE Community Platform v1.0 Worksheet

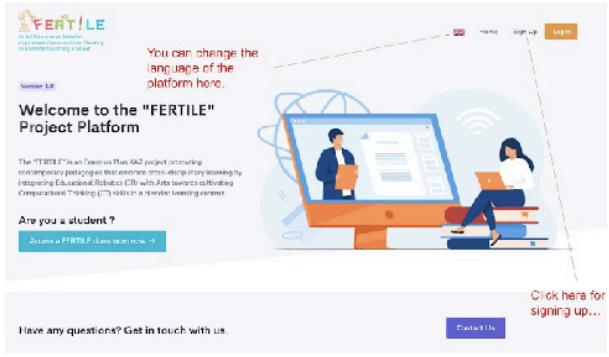
1. Email *
2. Please, indicate your name and surname *
3. Your Country *
4. Your Institution
5. Years of teaching experience *
6. Teaching level(s) *

Check all that apply.

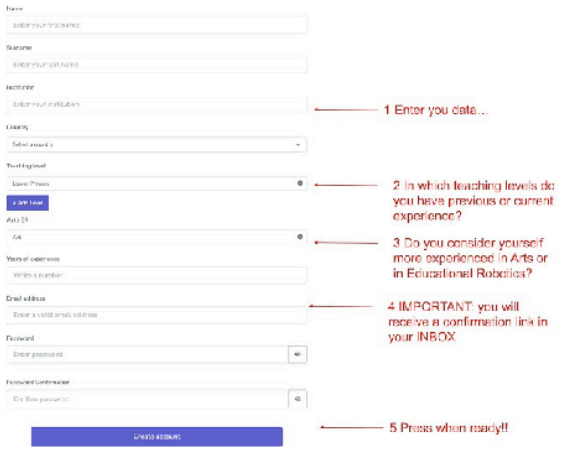
- [ ] Lower Primary
- [ ] Upper Primary
- [ ] Lower Secondary
- [ ] Upper Secondary
- [ ] Higher Education
- [ ] Other:

PHASE 1: USER REGISTRATION

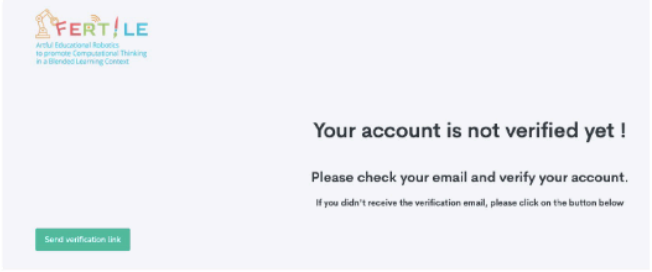
First of all, you need to register into the FERTILE CP. Please, go to fertile.gsic.uva.es. You can change the language of the platform (although we will use the English version in this document). Then, follow the "Sign up" process to create your FERTILE account.



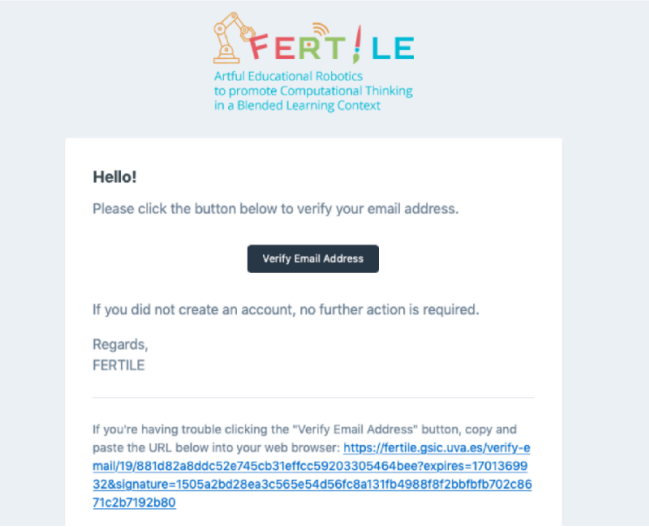
During the registration process, you can introduce your basic personal data, your teaching experience, the educational levels in which you have experience,... and you can also select whether you consider yourself more experienced in Art-related topics, or in Educational Robotics (ER).



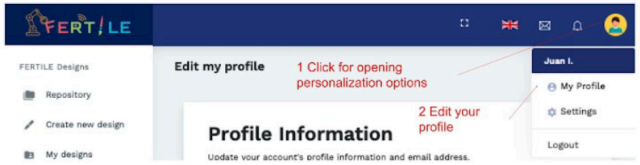
When you press "Create account", a confirmation email message will be sent to your email account.



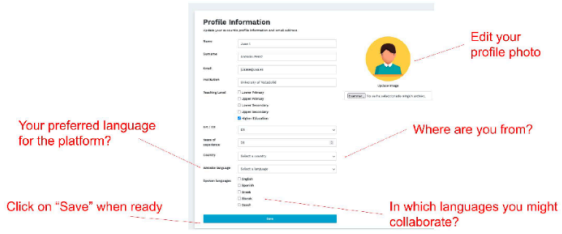
Please, check your email Inbox. You will have received a message similar to the following one (if not, please, check your SPAM folder). Click on "Verify Email Address" to complete the registration process.



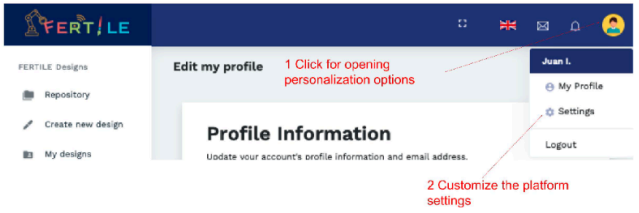
Once you have completed the registration process, you will be redirected to the home page of the Community Platform (Welcome!!!). You can change your personal data and settings by clicking on the top-right part of the screen (try it!). Let's start by completing your profile:



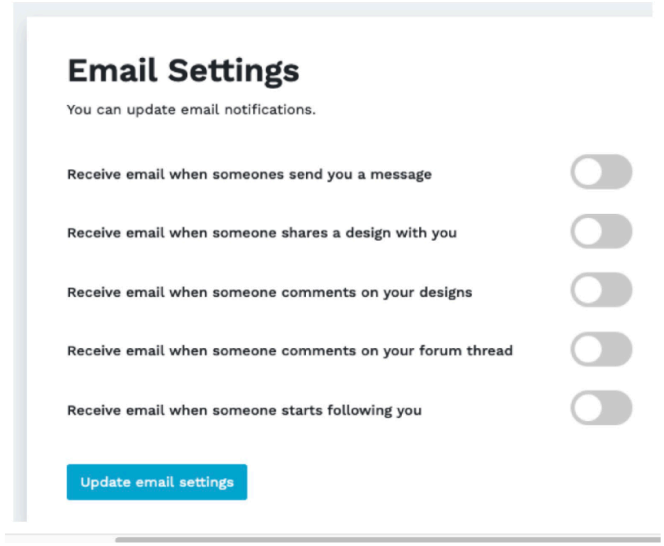
If you click on "My Profile" you will be able to select a photo for your profile, to indicate your country, the preferred language for the FERTILE CP, and the languages in which you might collaborate (the FERTILE CP gathers teachers from several countries!). Click on "Save" when you have finished.



Now you can change your personal settings for the platform:



The settings page allows you to decide when you want the FERTILE CP to send email messages to you. By default, no message will be sent... but you can change that on this page at any moment. Email messages may help you be aware of what is going on at the FERTILE Community!. Click on "Update email setting" when ready.



7. Please, rate your level of agreement (1-Strongly disagree, 7-Strongly agree) with the following sentences: *

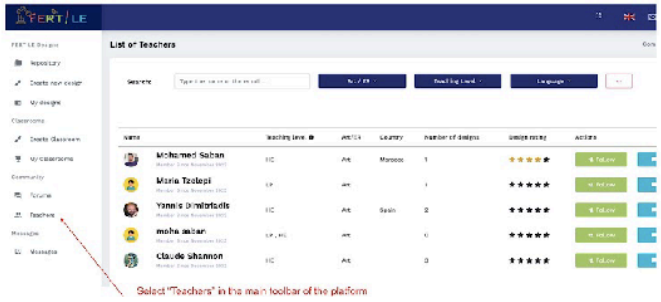
Mark only one oval per row.

	1	2	3	4	5	6	7
The functionality "User Registration" meets my requirements	◯	◯	◯	◯	◯	◯	◯
Using the functionality "User Registration" is a frustrating experience	◯	◯	◯	◯	◯	◯	◯
The functionality "User Registration" is easy to use	◯	◯	◯	◯	◯	◯	◯
I have to spend too much time using the functionality "User Registration"	◯	◯	◯	◯	◯	◯	◯

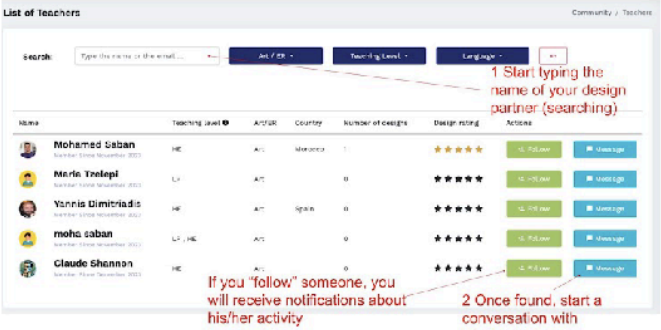
8. Please, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

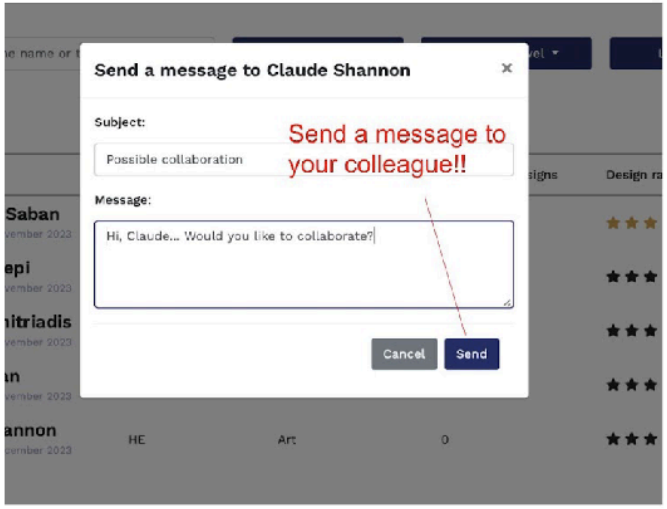
PHASE 2: LIST, SEARCH FOR, AND SEND MESSAGES TO TEACHERS

You are now part of the FERTILE COMMUNITY!!! As you can see, the platform has a toolbar on the left part of the screen. This is the main way of navigating through the platform. Let s start by the "Teachers" functions:

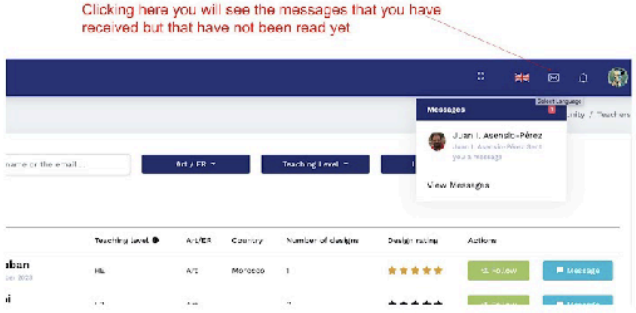


What you get is a list of all the other users (teachers) that are registered in the Community Platform. You can, for instance, search them by name, "follow them" and even start a conversation with them. Try to search for the teacher you are going to work with and start a conversation with him/her. These are the steps:

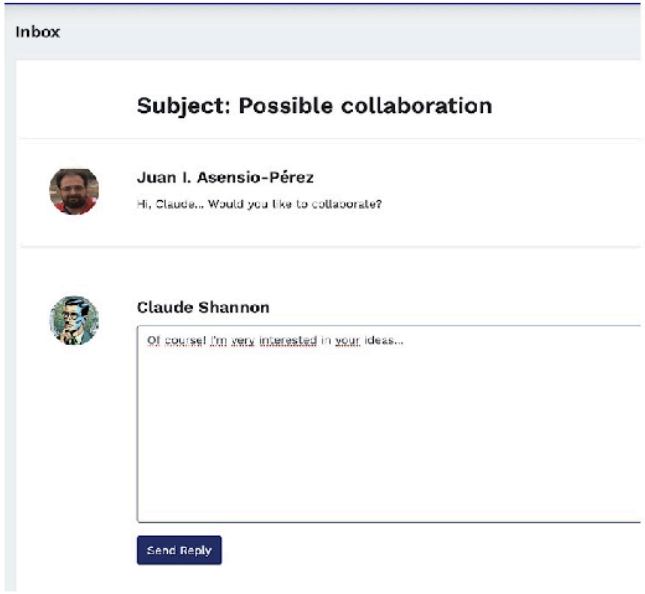




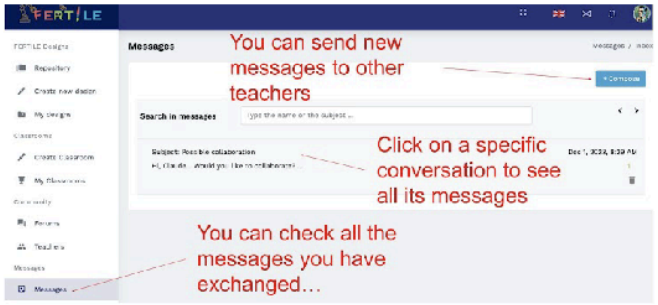
The top toolbar of the Community Platform will inform you about the reception of messages:



Clicking on one of the messages, you can access the whole conversation with that teacher:



If you want to see all your conversations with other teachers, you can click on "Messages" in the main toolbar:



9. Please, rate your level of agreement (1-Strongly disagree, 7-Strongly agree) with the following sentences: *

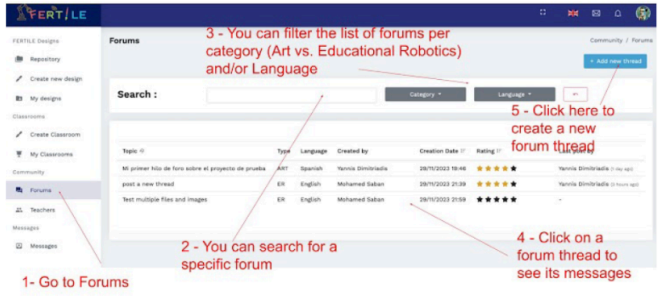
Mark only one oval per row.

	1	2	3	4	5	6	7
The functionality "List, search for, and send messages to teachers" meets my requirements	◯	◯	◯	◯	◯	◯	◯
Using the functionality "List, search for, and send messages to teachers" is a frustrating experience	◯	◯	◯	◯	◯	◯	◯
The functionality "List, search for, and send messages to teachers" is easy to use	◯	◯	◯	◯	◯	◯	◯
I have to spend too much time using the functionality "List, search for, and send messages to teachers"	◯	◯	◯	◯	◯	◯	◯

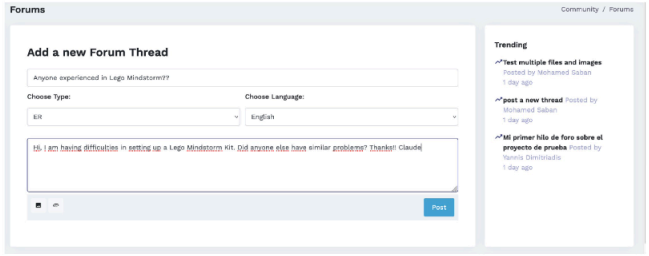
10. Please, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

PHASE 3: CREATE AND PARTICIPATE IN FORUMS

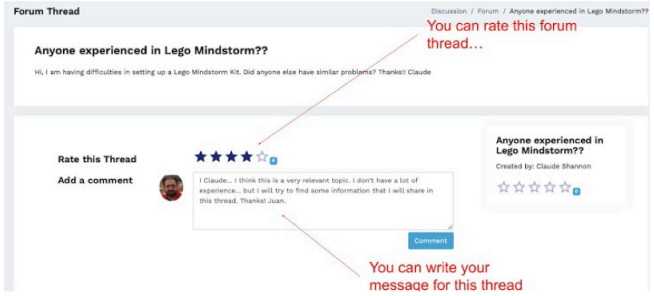
In addition to one-to-one messages, the Community Platform provides a many-to-many way of communication: FORUMS. You can find that option in the main toolbar (on the left). Click on "Forums" and you will see a list of current forums on the platform. You can search for specific topics and or filter the list of forums per category (Arts vs. Educational Robotics) and/or language. Clicking on a forum will take you to the list of its messages. And click on "+Add new thread" to create a new forum.



Try to create a new Forum Thread (i.e., a new topic for discussion) and/or post messages to your own or others' forums. You can engage in an asynchronous conversation or even participate in the forums of other design teams!



Forums can be rated, and you can also reply to and/or "like" messages posted in forums. Try to rate the forum created by someone else, post a message, and reply to another one. It is easy!



11. Please, rate your level of agreement (1-Strongly disagree, 7-Strongly agree) with the following sentences: *

Mark only one oval per row.

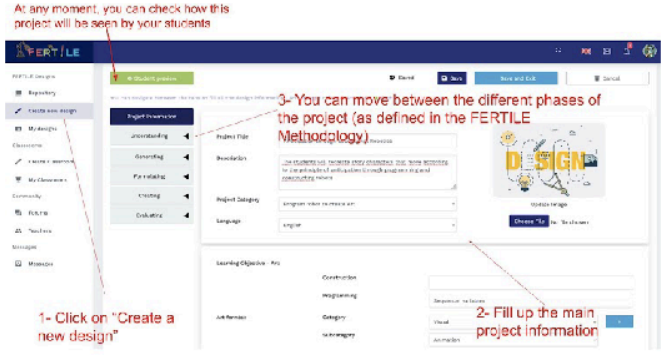
	1	2	3	4	5	6	7
The functionality "Create and participate in Forums" meets my requirements	◯	◯	◯	◯	◯	◯	◯
Using the functionality "Create and participate in Forums" is a frustrating experience	◯	◯	◯	◯	◯	◯	◯
The functionality "Create and participate in Forums" is easy to use	◯	◯	◯	◯	◯	◯	◯
I have to spend too much time using the functionality "Create and participate in Forums"	◯	◯	◯	◯	◯	◯	◯

12. Please, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

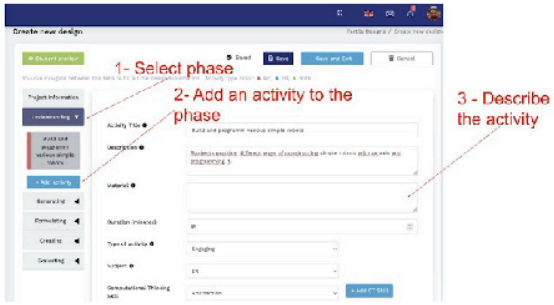
PHASE 4: CREATING A DESIGN

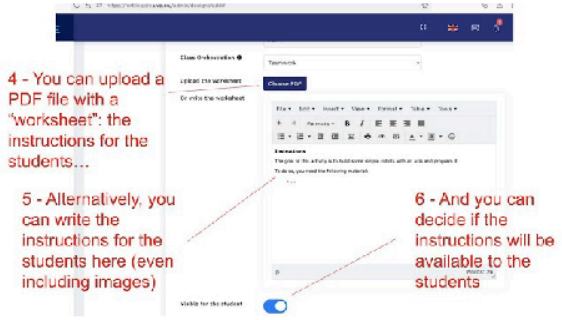
Once we have checked the main "Community" features (Users and Forums), let's move on and try the most FERTILE-specific feature of the Community Platform: creating a new Artful ER design. In this section we will concentrate on creating, individually, a sample design. Future section will illustrate how to publish it, share it, etc... But, again, this phase will involve only individual work. We are going to explain how to create a small part of a sample educational design, but you can use this explanation to start creating your own.

You first need to go to the "Create new design" option of the main toolbar (IMPORTANT NOTE: all changes are saved "on the fly"... and you can also undo or redo your changes).

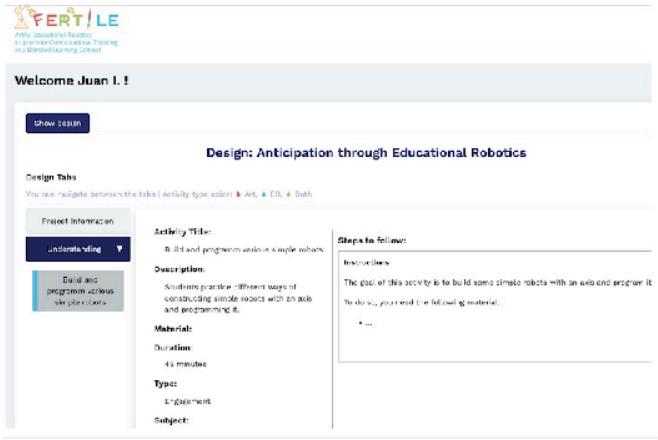


You can now start creating learning activities in the different phases of the design (the phases of the "FERTILE Methodology"). You can "navigate" across the phases or go back to the overall design information. For instance, let's create an activity for the "Understanding" phase:





Now, why don't you try to add another activity? You can add it to the "understanding" phase or to any other (you can "drag and drop" activities among phases). At any moment, you can click the "Student Preview" button and a new browser tab will open showing how the instructions for students will be displayed:



Once you finish editing the design, you can "Save and exit" the editor (you will be taken to the 'My Designs' page)

13. Please, rate your level of agreement (1-Strongly disagree, 7-Strongly agree) with the following sentences: *

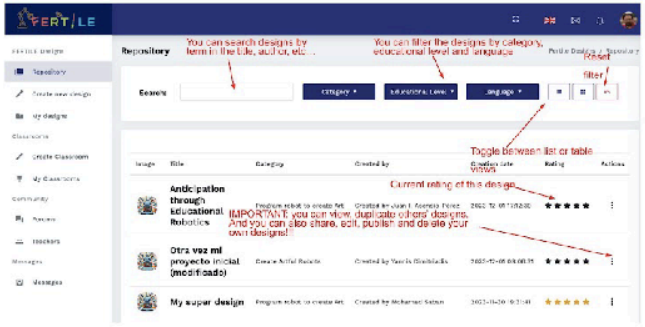
Mark only one oval per row.

	1	2	3	4	5	6	7
The functionality 'Create a Design' meets my requirements	◯	◯	◯	◯	◯	◯	◯
Using the functionality 'Create a Design' is a frustrating experience	◯	◯	◯	◯	◯	◯	◯
The functionality 'Create a Design' is easy to use	◯	◯	◯	◯	◯	◯	◯
I have to spend too much time using the functionality 'Create a Design'	◯	◯	◯	◯	◯	◯	◯

14. Please, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

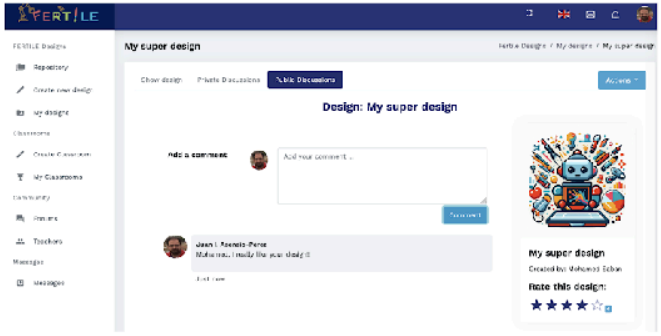
PHASE 5: LIST, SEARCH, FILTER, COMMENT, AND RATE DESIGN PROJECTS

There are two places in which you can list, search, and filter designs: the "My Designs" page, and the "Repository" page. In the "My Designs" page only designs created by you (or shared with you, we will talk about this later) will be listed. In the "Repository" page ALL designs created in the platform, and made public by their creators, can be found. Both pages are almost identical, so you can go to "Repository" and take a look, testing the searching and filtering options. In the "Actions" menu (see screenshot below) you can find the available options for you in relation to a particular design (the available options are different depending on whether the design is yours or someone else's)



If you click on a design (or select the action "view") you will be able to look into a design (yours or someone elses design). It is a kind of "read-only" view of the design. You can also find in the "view" of the design one or two tabs (depending on whether you can edit the design or not):

- Private discussion: that allows the owners of a design (if more than one) to exchange messages.
- Public discussion: that allow anyone in the FERTILE community to comment on the design, as well as to provide a rating about it (see image below)



15. Please, rate your level of agreement (1-Strongly disagree, 7-Strongly agree) with the following sentences: *

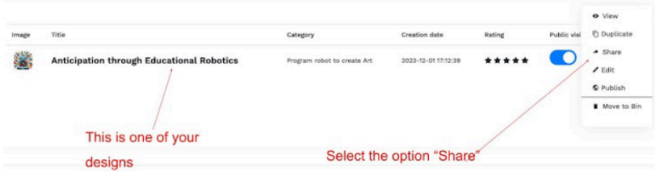
Mark only one oval per row.

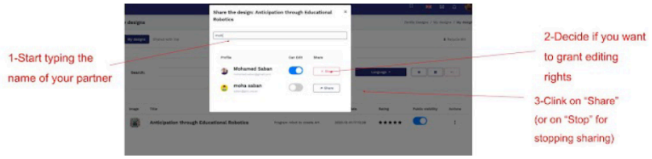
	1	2	3	4	5	6	7
The functionality "List, search, filter, comment, and rate designs" meets my requirements	◯	◯	◯	◯	◯	◯	◯
Using the functionality "List, search, filter, comment, and rate designs" is a frustrating experience	◯	◯	◯	◯	◯	◯	◯
The functionality "List, search, filter, comment, and rate designs" is easy to use	◯	◯	◯	◯	◯	◯	◯
I have to spend too much time using the functionality "List, search, filter, comment, and rate designs"	◯	◯	◯	◯	◯	◯	◯

16. Plase, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

PHASE 6: SHARE AND REUSE DESIGNS

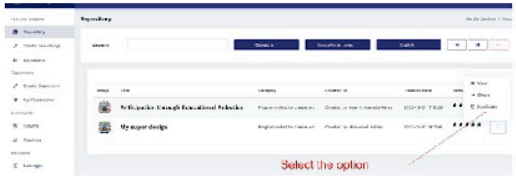
It is time now to share your designs with your partners. This way, the same design can be edited by more than one teacher (although NOT AT THE SAME TIME). To do so, you can go to "My Designs" and, for the design you want to share, click on "Actions" and select "Share". Then, search for the Teachers you want to share the design with, indicating if you want to share it with editing rights.





Now, this design should appear in the list of "My Designs" of your partner... under the tab "Shared with me". Can your partner see it? Can (s)he edit the design? (NOTE: the same design cannot be edited by more than one teacher at the same time. If a design is being edited it will be "blocked" until saved by the current editing teacher or, in case of inactivity, after 15 minutes).

The Community Platform also gives you the opportunity to reuse designs proposed by other teachers (not needing to be a co-designer to do so). In this case, a copy (or "duplicate") of the original design will be made and will be assigned to "My Designs", so that you can make your own changes. To do so, you can go to "Repository" and, for the design you want to reuse, click on "Actions" and select "Duplicate". The duplicated design will appear now in "My Designs" (you can now edit it and, for instance, change the title).



17. Please, rate your level of agreement (1-Strongly disagree, 7-Strongly agree) with the following sentences: *

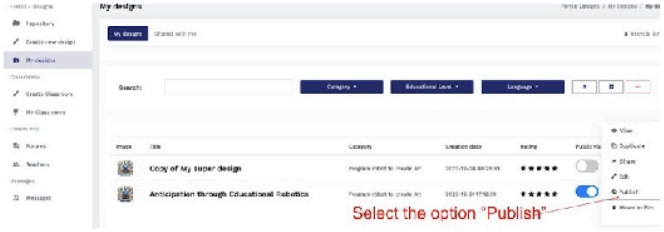
Mark only one oval per row.

	1	2	3	4	5	6	7
The functionality "Share and reuse designs" meets my requirements	◯	◯	◯	◯	◯	◯	◯
Using the functionality "Share and reuse designs" is a frustrating experience	◯	◯	◯	◯	◯	◯	◯
The functionality "Share and reuse designs" is easy to use	◯	◯	◯	◯	◯	◯	◯
I have to spend too much time using the functionality "Share and reuse designs"	◯	◯	◯	◯	◯	◯	◯

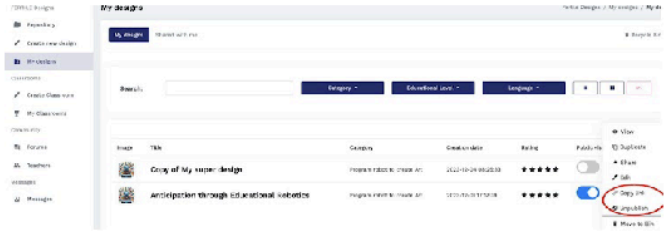
18. Plase, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

PHASE 7: PUBLISH DESIGNS

The idea of "publishing designs" consists of making your designs available to Teachers that are not members of the FERTILE Community Platform (i.e., they are not registered in the platform). If you publish your designs, they will be accessible by anyone using the URL provided by the platform. To do so, you can go to "My Designs" and, for the design you want to "publish", click on "Actions" and select "Publish":



Once you have published the design, if you click on "Actions" again you will see that two new options appear: "Unpublish" and "Copy Link". The latter provides you with the link by means of which the design can be accessed from outside the Community Platform. Try it! Click on "Copy Link", open a new tab in your web browser, and paste it... What can you see? Of course, if you want to stop allowing external teachers to access (in a read mode only) your design, you can simply "Unpublish" it...



19. Please, rate your level of agreement (1-Strongly disagree, 7-Strongly agree) *

Mark only one oval per row.

	1	2	3	4	5	6	7
The functionality "Publish Designs" meets my requirements	◯	◯	◯	◯	◯	◯	◯
Using the functionality "Publish Designs" is a frustrating experience	◯	◯	◯	◯	◯	◯	◯
The functionality "Publish Designs" is easy to use	◯	◯	◯	◯	◯	◯	◯
I have to spend too much time using the functionality "Publish Designs"	◯	◯	◯	◯	◯	◯	◯

20. Please, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

PHASE 8: MANAGE CLASSROOMS AND ASSOCIATE DESIGNS FOR ENACTMENT

Let's imagine that you, as a teacher, have completed an educational design and you want it to be enacted by one cohort of your students at the school. In this case, you need to create a "Classroom" in the platform. If you want the same design to be enacted by another cohort of students (in the same or different school), you need to create a different classroom, and so on. You can assign more than one design to the same classroom (e.g., you create a design for the first month of the semester and another design for the fourth month... both designs for the same cohort of students). Summing up, you will typically need to follow the same steps:

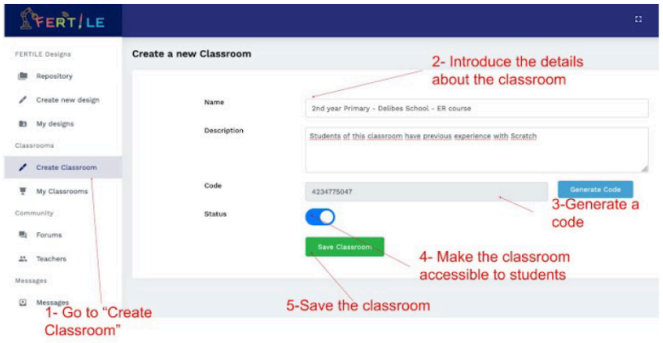
1. Create a classroom
2. Assign one or more designs to the classroom
3. Provide your students with the code to enter the classroom

You have two ways of allowing your students to access the "classroom" in the FERTILE platform (students don't need to register!):

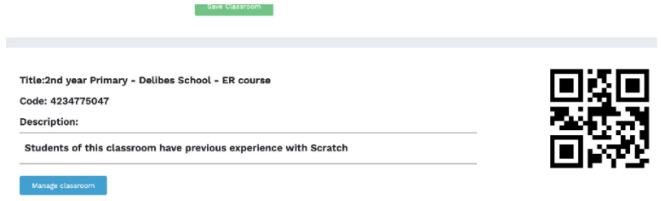
1. By providing them with a QR code or a URL generated by the platform (this way, the students can scan the QR code and will automatically be taken to the "classroom").
2. By providing them with a numerical code (in this case, the students simply need to go to https://fertile.gsic.uva.es/classroom and enter that code).

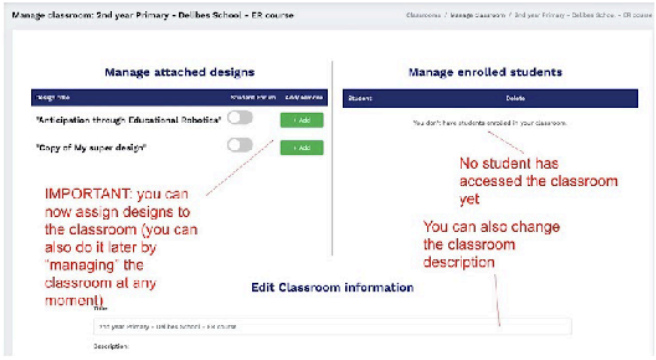
In both cases, the students need to indicate their real name (or alias) that they will use while interacting with the platform. Another interesting feature is that teachers can, at any time, request the FERTILE platform to regenerate the QR or numerical code for accessing one particular classroom. In this way, if the teacher detects that someone is not making an appropriate use of the classroom, s/he can regenerate the code and not provide it to that person.

You can now create your own classroom and assign one of your designs to it:



After "saving" the classroom, you can now see the QR code that would give direct access to the classroom. **You can also see the NUMERICAL CODE that grants access to the classroom (WRITE IT DOWN, since you will use it in the next phase)**. However, before granting students access to the classroom, it is VERY IMPORTANT that you assign one or several of your designs to the classroom. Do not forget to do that (otherwise, the students will find an "empty" classroom when accessing). To do so, click on "Manage classroom":





When associating designs to the classroom, you can decide whether there will be a forum for the students related to those designs (see "Student Forum" control in the above screenshot).

At any time, you can change the above settings by going to the "My Classrooms" page... If you click on the "Actions" associated with a classroom, you can get the link or the QR to be provided to the students. You can also "Manage" the classroom (e.g., for associating other designs, for checking which students have accessed the classroom, etc.) or even access it (for checking what the students will see, and also for talking to them via the forums associated with the designs, as we will explain later).

21. Please, rate your level of agreement (1-Strongly disagree, 7-Strongly agree) with the following sentences: *

Mark only one oval per row.

	1	2	3	4	5	6	7
The functionality "Manage Classrooms and Associate Designs for Enactment" meets my requirements	◯	◯	◯	◯	◯	◯	◯
Using the functionality "Manage Classrooms and Associate Designs for Enactment" is a frustrating experience	◯	◯	◯	◯	◯	◯	◯
The functionality "Manage Classrooms and Associate Designs for Enactment" is easy to use	◯	◯	◯	◯	◯	◯	◯
I have to spend too much time using the functionality "Manage Classrooms and Associate Designs for Enactment"	◯	◯	◯	◯	◯	◯	◯

Designs for Enactment"

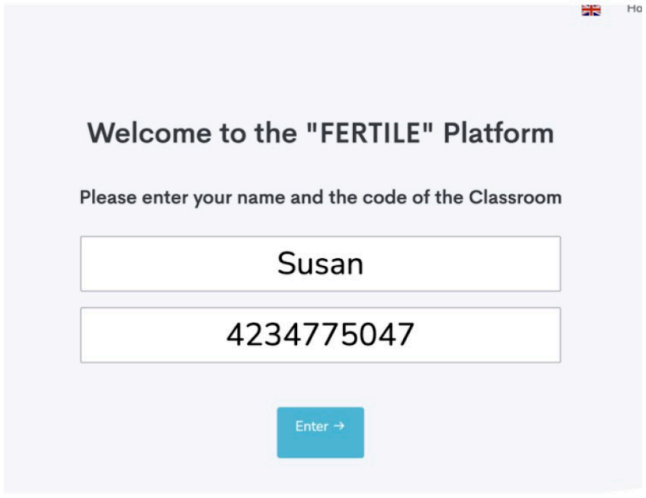
22. Plase, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

PHASE 9: THE STUDENTS' VIEW (INSTRUCTIONS FOR ENACTMENT)

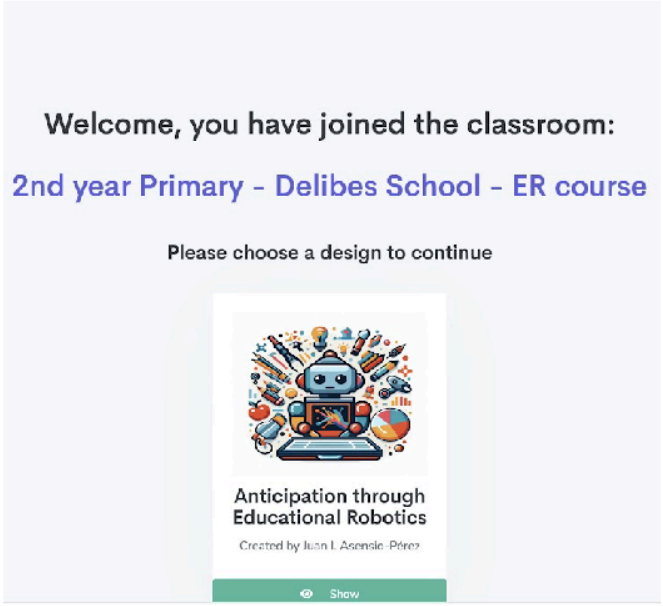
AT LAST!!! Now it is time for students to access and use the awesome Artful ER designs you (as teacher) have created. As explained in the previous phase, students have two options to access a classroom (depending on the information provided by the teacher):

1. Accessing via QR code or public link
2. Going to https://fertile.gsic.uva.es/classroom and entering a numerical code

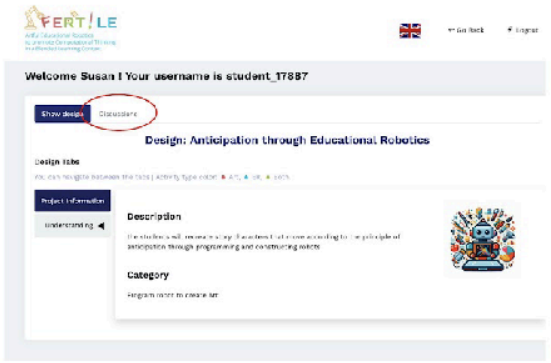
Let's illustrate the second one. **NOW YOU ARE PLAYING THE ROLE OF A STUDENT!!** Open a "private windows" of your browser (or use a different browser) and go to https://fertile.gsic.uva.es/classroom. You can then enter the name of a fictitious student (Susan, in the example below) and the numerical code that was generated when creating the classroom in the previous phase:

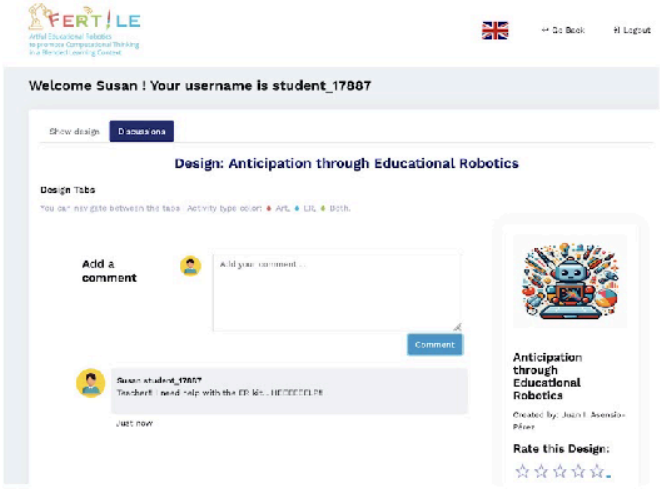


After clicking "Enter", the student gets a list of the designs available in that classroom. The student can then click on "Show" and access a "read-only" view of the design that s/he can browse (accessing, for each activity, the "instructions for students" as reflected in the PDF or "rich text" worksheets).



The students can also access the "Discussions" tab for exchanging messages with the teachers and the other students (Warning, the "Discussions" tab only appears if the teacher configured this option when "Managing" his/her classroom):





In addition to posting messages about the design, the students can also rate it.

If you go back to your original browser window (in which you were playing the role of teacher), you can click on "My Classrooms", click on "Actions", and then select "Manage classroom". If you do so, you will have the possibility of managing the students that have accessed the classroom and "remove" them from the classroom if they are "misbehaving":

23. Please, rate your level of agreement (1-Strongly disagree, 7-Strongly agree) with the following sentences: *

Mark only one oval per row.

	1	2	3	4	5	6	7
The functionality "Students view (Instructions for Enactment)" meets my requirements	⬭	⬭	⬭	⬭	⬭	⬭	⬭
Using the functionality "Students view (Instructions for Enactment)" is a frustrating experience	⬭	⬭	⬭	⬭	⬭	⬭	⬭
The functionality "Students view (Instructions for Enactment)" is easy to use	⬭	⬭	⬭	⬭	⬭	⬭	⬭
I have to spend too much time using the functionality "Students view (Instructions for Enactment)"	⬭	⬭	⬭	⬭	⬭	⬭	⬭

24. Plase, explain your answer to the question(s) above and/or provide your comments and/or suggestions regarding the functionalities of the Community Platform you have tested in this phase.

OVERALL QUESTIONS

Great! You have now tried all the main functionalities of the FERTILE Community Platform. We would appreciate if you could complete the following 10 questions (considering the Community Platform as a whole):

25. Please, rate your level of agreement with the following sentences: *

Mark only one oval per row.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I think that I would like to use the FERTILE Community Plaform frequently					
I found the FERTILE Community Platform unnecessarily complex					
I thought the FERTILE Community Platform was easy to use					
I think that I would need the support of a technical person to be able to use the FERTILE Community Platform					
I found that the various functions in the FERTILE Community Platform were well integrated					
I thought that there was too much					

I found the FERTILE Community Platform very awkward to use					
I felt very confident using the FERTILE Community Platform					
I needed to learn a lot of things before I could get going with the FERTILE Community Platform					

LAST REMARKS AND THANK YOU!!

Thank you very much for your help and feedback. It is most valuable!!! To finish this (rather long) questionnaire, we have two last questions for you. THANKS!!!!

26. Please, after having tested the platform, and according to your opinion, ¿what are the two most POSITIVE aspects of the FERTILE Community Platform?

27. Please, after having tested the platform, and according to your opinion, ¿what are the two most NEGATIVE aspects of the FERTILE Community Platform?

Appendix D. Software Bugs and Suggestions for FERTILE CP v1.0

The following table lists the software bugs and the functional limitations identified by the FERTILE partners and by the participants in the FERTILE training pilots described in section 3.1. The table contains information about which partner reported the issue (as a result of their own testing or of the training events they coordinate), the date of the report and, for the sake of traceability, the means by which the issue was communicated to the UVA's development team. The table covers the period from the release of the FERTILE CP v1.0 (early Dec., 2023) until the release of the FERTILE CP v2.0, on April 20th, 2024.

Bug and Suggestions	Reported by	Date	Means	Functional group
In "settings", the first sentence must be corrected: "Receive email when someone sends you a message" (now it says "someone send you" :)	UVA	7/12/2023	Email	Community Support
* In "Teachers", if I use the filters, from that moment on "null" appears in the teachers who do not have the country configured (Be careful, at first it doesn't come out... only after using the filters).	UVA	7/12/2023	Email	Community Support
I cannot see myself on the List of teachers. I would like to see myself as a member of the community to have an overview of my statistics.	UNIWA	15/12/2023	Shared document	Community Support
when you send a message without filling in the 'Subject' then error appears	UNIWA	15/12/2023	Shared document	Community Support
The button "Αποθήκευση" overlaps the text "Αποθηκεύτηκε" . Pls position it to the left.	UNIWA	15/12/2023	Shared document	Community Support
When I write the Title of The project the "Untitled" is not deleted. I have to go back and do it manually after writing.	UNIWA	15/12/2023	Shared document	Design Support
Correct translation	UNIWA	15/12/2023	Shared document	Community Support

When I make changes in the drop-down menu or the image file, they are not saved.	UNIWA	15/12/2023	Shared document	Design Support
If I am idle (for just a few minutes) while editing or viewing a design then the platform automatically closes the window of the design. It saves my work, but still, it is annoying!	UNIWA	15/12/2023	Shared document	Design Support
The text “Learning Objectives - ER has moved in the second section but the fields of this which are the “construction” and “programming” field, are still in the first section. I have sent you an image of	UNIWA	15/12/2023	Shared document	Design Support
While I design, the site suddenly refreshes and opens the general screen with the list of all projects. Also, the other students referred to that problem.	UNIWA	15/12/2023	Shared document	Design Support
There are no hoverings with explanations. This is important to be done asap.	UNIWA	15/12/2023	Shared document	Enactment Support
When I share my design with someone and give him access to edit, then I cannot edit it again. There is a pop-up message “Access to edit denied because ..... (name of the co-designer) is editing it. Even when the co-designer has logged out of the platform. It takes about 10 minutes to have access again.	UNIWA	15/12/2023	Shared document	Design Support

I just noticed that the hovers do not appear the 2nd time that I try to edit a project. In this case the 'Generalisation' skill also appears.	UNIWA	22/12/2023	Email	Enactment Support
a forum on the CP (where our students refer bugs in Greek	UNIWA	22/12/2023	Email	Enactment Support
I tried to create a correction to the Czech language, however there are some nuances that I am unable to translate without context or to see them, where they are placed in the platform. I have marked these in yellow,	CUP	29/12/2023	Email	Community Support

hopefully the rest will be fine.				
Yesterday I wrote the whole design out, saved every activity, saved the whole thing when I was done and left. Today I opened a completely blank form, only the evaluation was still there, so I started writing it again. Unfortunately, it did not save the activity again, even though I was very careful and clicked save. Yesterday only the last part, the evaluation, remained saved, today the one before last. Does that mean I have to save the activity by always saving and exiting?	CUB	11/2/2024	Email	Design Support
Designs not saved when editing	CUB	11/2/2024	Email	Design Support
The Design page says "Class Organization Form" instead of "Class Orchestra".	CUB	11/2/2024	Email	Community Support
Computational Thinking skills not saved	CUB	11/2/2024	Email	Design Support
Public link of the design not working	CUB	11/2/2024	Email	Design Support
Add FAQ	UVA	12/2/2024	Internal Meeting	Community Support
Test edit design CT skills	UVA	12/2/2024	Internal Meeting	Design Support
Add Public Visibility button	UVA	26/02/2024	Internal Meeting	Design Support
Following this discussion, I would also like to draw attention to the translation of some fields into Greek. Upon reviewing the corresponding tab, I observed that there are translations that have not been integrated into the platform yet.	UNIWA	16/2/2024	Email	Community Support
When I share my design with the co-designer they can see it only when the design is public. (This means that everyone on the platform can see the unfinished design...)	UNIWA	12/3/2024	Shared Document	Design Support
The Art co designer mentioned that he is trying to add the activities to the "Ταξίδι στον Άρη v2" design that we made from scratch some days before, but not all activities are displayed. (If	UNIWA	12/3/2024	Shared Document	Design Support

you remember, the same thing had happened to me with the ER activities) Also the type of activity and CT skills change by itself. In the same Design there is no problem with the ER activities.				
In phase 1, in the 2nd ART activity it is displayed as CT skill algorithmic thinking whereas inside the professor has chosen Abstraction. In edit mode it is displayed correctly.	UNIWA	13/3/2024	Shared Document	Design Support
In phase 4 I cannot delete the ER activity	UNIWA	13/3/2024	Shared Document	Design Support
When I choose a 2nd CT skill in an activity the skills are not translated in Greek	UNIWA	1/4/2024	Shared Document	Design Support
In Czech version I can see titles of attributes in Czech but the values are in EN (student preview and normal view).	CUP	8/4/2024	Shared Document	Community Support
There is no information about the sender of message in message list.	CUP	8/4/2024	Shared Document	Community Support
Information about project - If I choose the in Construction elements the Actuator One motor, later during editing there is again Leds (like in default mode).	CUP	8/4/2024	Shared Document	Design Support
Save and Exit does not take me out of editing mode	CUP	8/4/2024	Shared Document	Design Support
Saving is doubled - it is done automatically but there is also button Save but after click withou any feedback to user (in some cases) - it is confusing.	CUP	8/4/2024	Shared Document	Design Support
There is no possibility to change the order of activities. There should be option to drag-and-drop the activity among the Steps and other activities (left sub-navigation)	CUP	8/4/2024	Shared Document	Design Support

From editing mode the Student preview does not take you to correct page (Editing mode appears again).	CUP	8/4/2024	Shared Document	Design Support
There is no information about the order of activities. Some activity in the Evaluation step may be ahead of others from another step, but it is not possible to mark it as such	CUP	8/4/2024	Shared Document	Design Support
Different appearance. In the worksheet there are no buttons.	CUP	8/4/2024	Shared Document	Design Support
There is another step you have to do - click on View Messages	CUP	8/4/2024	Shared Document	Community Support
There is no indication in the list of projects which is public. Under the three dots, there is only the option Cancel publishing	CUP	8/4/2024	Shared Document	Community Support
The button “Back” changes the default order of Discussions (list) but without any notification or information - it is confusing.	CUP	8/4/2024	Shared Document	Design Support
When applying some filter the paging disappears	CUP	8/4/2024	Shared Document	Community Support
According to the instructions, a class was established (worksheet 8) and subsequently joined as a student (worksheet 9) under the name Giorgio Napolitano. Comment inserted according to instructions. Then, according to the instructions (worksheet 9), move back as a teacher, an overview of classes is displayed, but none appear in the list.	CUP	8/4/2024	Shared Document	Community Support
Wrong ordering of Discussions when changing from the page 1 to page 2.	CUP	8/4/2024	Shared Document	Enactment Support
In the repository list the button NEXT does not work (the paging)	CUP	8/4/2024	Shared Document	Community Support

The link has wrong url (it goes the list of My Designs)	CUP	8/4/2024	Shared Document	Community Support
When I am on the Repositories page, the menu item is not highlighted. And the top right link does not work.	CUP	8/4/2024	Shared Document	Community Support
Student preview button doesn't work in EDIT design page	UVA	24/04/2024	Email	Design Support
Editing an old design is not working	UVA	24/04/2024	Email	Community Support
Two slide buttons in the dashboard, one to make the design in the repository and the other to make it public	UVA	24/04/2024	Email	Community Support

APPENDIX E. POSITIVE AND NEGATIVE COMMENTS FROM THE SUS QUESTIONNAIRE

This appendix contains all the comments (positive and negative) about the FERTILE CP as a whole, provided by the participants of the pilots when answering to the open-ended questions included at the end of the training worksheet (see appendix C). The original comments were made in the languages of the countries of each pilot, and then translated into English by the organisers of the pilots. The comments are clustered under a set of emerging thematic categories identified by researchers from UVA.

POSITIVE Comments

Collaboration and Communication	
It tries to find a connection between informatics and art, it encourages teacher collaboration.	**CUB**
Sharing projects between teachers (I can comment on someone's project, but also copy and edit it) and the ability to divide the project into smaller parts and activities	**CUB**
Ability to work collaboratively on assigned projects. The opportunity to be inspired.	**CUB**
1. Sharing work from two different computers. 2. Two teachers one project	**CUB**
Breaking the project down into steps, being able to see other teachers' projects as a source of ideas	**CUB**
Community collaboration, use during online learning	**CUB**
new ideas, collaboration with other members of the community	**CUB**
Searching for projects and people	**CUB**
Allows creating and sharing well-structured projects and the involvement of students	**CUB**
The Fertile Community Platform has many positive features, with the main one being that it allows collaboration and the exchange of ideas among individuals specialising in the same subject. Additionally, it allows you to choose whether you want to publish your work or not, or whether you want it to be open for public editing. The ability to exchange messages and discussion forums is particularly important, as new ideas can be born and any mistakes can be corrected.	**UNIWA**
the communication with colleagues and classroom creation	**UNIWA**
interaction between users. An online learning resource	**UNIWA**
Connecting teachers- liking, sending,... creating a class	**CUP**
the ability to create, share and use your own and other teachers' materials	**CUP**
the site is clear and nicely designed, the possibility of sharing projects	**CUP**
Possibility to communicate with other teachers and share project proposals	**CUP**

Emphasis on interdisciplinarity and collaboration, emphasis on aspects of computational thinking	**CUP**
Possibility of sharing with other teachers/platform users as well as sharing with a selected class.	**CUP**
That there is a possibility to share projects with other teachers and that they can be shared outside the platform.	**CUP**
The ability to share material with other teachers and present material to students.	**CUP**
Opportunity to collaborate and see other designs	**CUP**
Collaboration between the computer scientist and the second teacher (subject area). The purpose of the connection - development of key digital competences (Czech national curriculum).	**URJC@URJC**
Sharing projects.	**URJC@UVA**

Interdisciplinarity (in relation with the FERTILE Design Methodology)	
It tries to find a connection between informatics and art, it encourages teacher collaboration.	**CUB**
Emphasis on interdisciplinarity and collaboration, emphasis on aspects of computational thinking	**CUP**
The connection between IM/robotics and the Art and Culture learning area. not the platform directly, but the whole course - existing materials on the platform (system, concept)	**CUP**

Ideation support	
Source of ideas for lesson activities. Learning about new possibilities.	**CUB**
Ability to work collaboratively on assigned projects. The opportunity to be inspired.	**CUB**
clarity of projects, new ideas	**CUB**
new ideas, collaboration with other members of the community	**CUB**
Allows creating and sharing well-structured projects and the involvement of students	**CUB**
Tool to foster creativity.	**URJC@UVA**

Design support	
It's possible to easily follow the FERTILE methodology steps. Design-wise it's a very pleasant environment.	**CUB**

- definition of incremental steps - computational thinking	**CUB**
It is well organized and helps the user to divide and develop an activity step by step.	**UNIWA**
You can set up a project from scratch easily and helpfully	**UNIWA**
1. In general, I consider the platform to be very easy to use. 2. The representation of the steps and the flexibility in creating the activities (colors, order of creation, etc.) helps in a better understanding of the overall project.	**UNIWA**
1. Easy registration and use of the platform. 2. The clear separation of activities related to arts, robotics or a combination of both.	**UNIWA**
The possibility of precisely defining courses according to the proposed methodology. Possibility of considering, in the definition, the technical aspects associated with the available development environments.	**URJC@UVA**
It has many resources available and everything is explained in a very clear way.	**URJC@UVA**

Easy, simple	**CUB**
clarity, simplicity	**CUB**
clear, easy to master	**CUB**
It is very simple to use and clear.	**UNIWA**
Appearance, clarity of the entire platform	**URJC@URJC**
Easy to use and very intuitive.	**URJC@URJC**
It's very didactic and easy to use	**URJC@UVA**
Public access and the easy utility to create a design.	**URJC@UVA**
How intuitive it is, easy to use, and clearly distributed.	**URJC@UVA**
"1. The platform's ease of use.	**URJC@UVA**
it's alright, thanks :)	**CUB**

Enactment	
sharing and the student login with a code	**CUB**
Classroom and group management.	**URJC@URJC**
2. Possibility of integrating students into projects."	**URJC@UVA**

Lack of originality	
another new platform - we already have a lot of them in our education system it didn't work the way it should - nothing was saving	**CUB**

Asynchronous editing and timeout for editing	
One negative aspect of this platform is that it doesn't allow more than one person to edit the same work simultaneously.	**UNIWA**
I didn't like the frame that showed how much active time I have while editing the activity and that when they make me or I follow someone there is no way to find them except to search for them. In addition, the fact that while they were following me or I was following them, they did not appear first in the list of teachers or even if there was a category of teachers I was following.	**UNIWA**
1. The fact that I can't work simultaneously with my partner. 2. Students do not see a single file (e.g. pdf) in which the activities are represented in the order they are supposed to do them. With no interest in the steps.	**UNIWA**
The inability to use it simultaneously.	**URJC@UVA**

Design complexity	
there's a lot of things you have to fill in to complete the project.	**UNIWA**
The way the platform presents the steps of the FDM feels quite rigid and like a step-by-step guide, which can be constraining, especially when computer science and art teachers are supposed to collaborate on projects and these projects will often have completely original characteristics. The second negative aspect is the name. I'm sorry, but in all my time getting to know the FERTILE project, I couldn't get the word fertility out of my head; the automatic translations will translate every occurrence of FERTILE designs into Fertile designs (which actually does occur on the page), and who knows what the automatic translation will look like in other languages. Searches for anything around this method will, by definition, always match references to egg fertilization methods. If it was at least a reasonable acronym, so be it, the logo even implies something of the sort by using different colours, but I haven't come across the origin of the word in all this time.	**CUP**
I missed having more freedom to fill in categories for my own project and to link them together.	**CUP**

A structure prepared for designing lessons that is too focused on partial steps and does not sustain the teaching as a whole, as a compact form towards a goal and does not support teachers' creativity and individuality (e.g. too many pre-made categories, not being able to add own categories...) Unequal relationship between computer science and arts in the structure for instructional design.	**CUP**
Complexity due more to scope and maybe some details - one aspect outranks two :-).	**CUP**
The technicalities of designing the methodology distracted me from thinking about the content and concept of the activities. But perhaps this is a problem for non-informaticians.	**CUP**
Boundedness and incompleteness in the design of the methodology	**CUP**
Pre-existing knowledge is required.	**URJC@UVA**

Suggestions	
1. There could be a grouping of designs in the repository, depending on the art with which educational robotics is combined (without the use of a filter). 2. Accessibility tools could be added, so that everyone would be able to use the platform.	**UNIWA**
it has its birth pangs, but these will be solved in time, otherwise I would mention the separate creation of material - it is unnecessarily complex and not very customizable	**CUP**
Would still like to fine-tune programmatically	**CUP**
As a minor issue, some information about the technical aspects of the robots found in each activity's design could be added.	**URJC@UVA**
"1. There is no option to invite students. For example: through an email sending the code. 2. Activities cannot be assigned for submission on the platform, or the design cannot be shared with a virtual classroom. For example: Classroom."	**URJC@UVA**

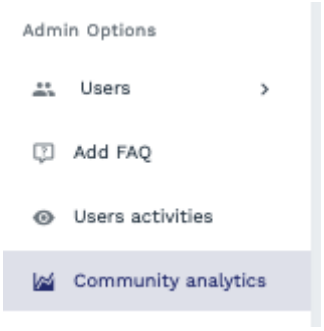
Bugs, software development	
Not widespread yet, almost no designs in Slovak.	**CUB**
The community is not developed yet, and a lack of ideas for lower grades.	**CUB**
unfinished materials - few materials so far, small virtual "library"	**CUB**
an awful lot of mistakes when editing projects, sometimes unintuitive names or positioning of items	**CUB**
The SAVE button didn't work and I had to recreate several things.	**CUB**
Creating a new design is too tedious, if I don't save it right away I lose all the content. Unable to upload multiple PDF files.	**CUB**

functionality of the platform	**CUB**
some functions don't work correctly	**CUB**
A new platform which still has bugs, it's too complicated for me for now	**CUB**
Uploading doesn't work, this is a very frustrating moment of the whole process. The "steps to follow" editor has a problem when working with images (the "Edit image" option is unnecessary, when after inserting it you can't select it and therefore can't edit it).	**CUB**
Problems when filling in designs	**CUB**
- occasional bugs (but that's a matter of debugging) - sometimes the choice of options was limiting	**CUB**
functionality in certain areas and saving project	**CUB**
It was very frustrating to create a project and find out the next day that only the sections "Introduction" and "Understanding" were saved. Likewise, the second time I filled it out, I found out that by filling out one activity it overwrites another. Otherwise, though, this is a great idea.	**CUB**
saving, saving and one more time: saving	**CUB**
Some fields were filled in and saved, however when we re-entered the project they still had their old value.	**UNIWA**
Some activities do not work such as In the sensors there is only the distance There is a general problem in the drop down lists - It does not give the possibility to change the educational level If we put more than 2 CT's it turns them all into abstraction. It may look like it from the outside but when doing an edit it doesn't show it correctly and then it doesn't get the changes. Also we can't do abstraction Maybe we need to change the icon in Cancel because it looks like a delete In show design if we have an activity in the ER category it doesn't show it. Only when we edit we can see it	**UNIWA**
bad language translation interface. not allowed two users editing at the same time	**UNIWA**
lack of explanations, unresolved problems, lack of choices,...	**CUP**
translations, when creating a project there could be the possibility of custom categories	**CUP**
Some ambiguous steps in the project design section and occasional minor errors (understandable with new software)	**CUP**
Poor Czech	**CUP**
	URJC@URJC

Failures (such as in saving designs) and slowness in updating statuses.	
There are still things to polish.	**URJC@URJC**
Some configurations are not saved.	**URJC@URJC**
There are still technical aspects to improve, such as 1) responsiveness and 2) the ability to add guidance to the design process, beyond the help section. For example, when filling out fields, supporting the teacher with additional information.	**URJC@UVA**

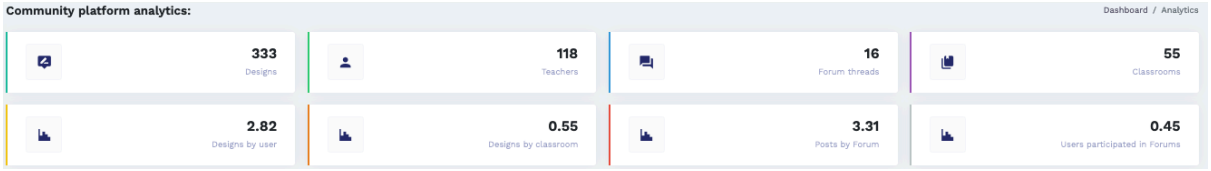
APPENDIX F. COMMUNITY ANALYTICS FUNCTIONALITY

After the evaluation of the FERTILE CP v1.0, the functionality of "Community Analytics" has been added to the platform (v2.0) and will be used by the project partners during the Multiplier Events of the project. This functionality is not intended to be used by the teachers using the platform. Only the administrators of the platform will be allowed to use these analytics by using a new option in the main toolbar of the user interface of the platform:



There are three main panels in the Community Analytics dashboard:

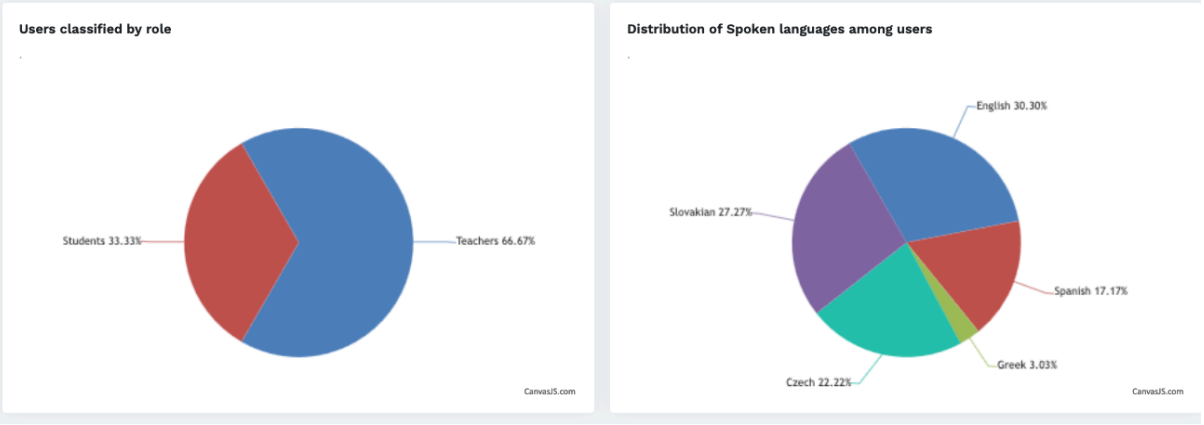
1) The "Community Platform Analytics" provide an overall quantitative view of the Artful ER projects created, the number of teachers registered in the platform, as well as the forums and classrooms created by them. Additionally, some mean values are provided so as to give an idea of the level of intensity with which the teachers have used the functionalities of the platform:



2) The "Designs Analytics" provide a set of pie charts and bar charts summarizing the main characteristics of the designs created by the teachers of the platform:

3) Finally, the "Users analytics" gives an overview of the distribution of the types of users of the platform, as well as of the languages they can use:

Users analytics:

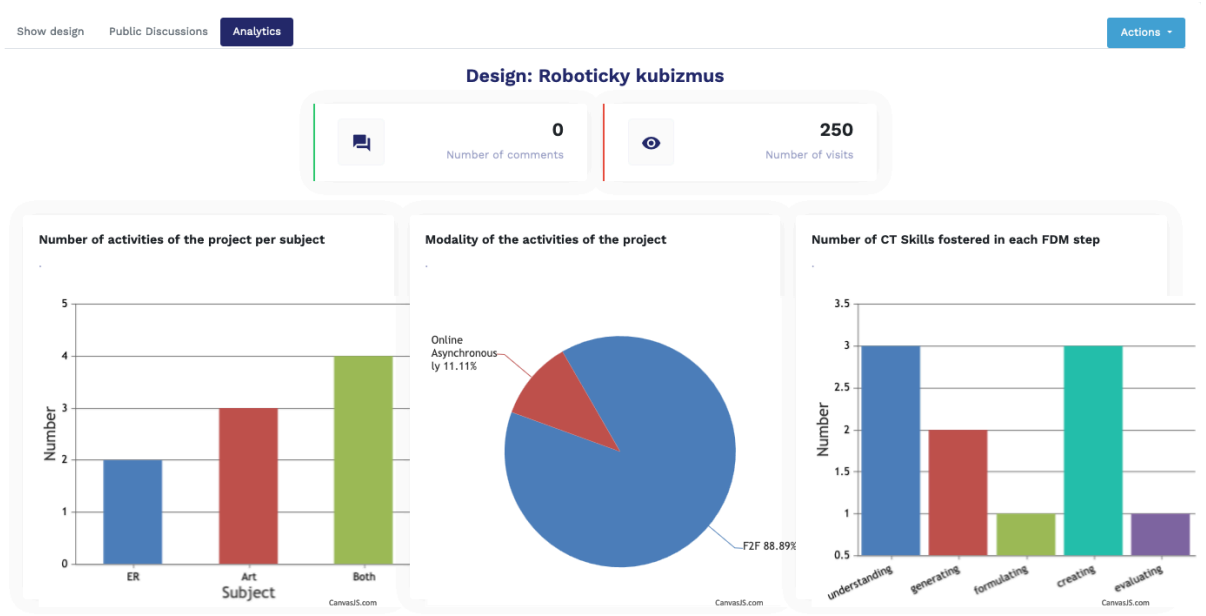


APPENDIX G. DESIGN ANALYTICS FUNCTIONALITY

In order to further improve the support to the "Visualise summary of Artful ER projects" functional requirement identified in D2.1, the FERTILE CP v2.0, that will be employed during the multiplier events of the project, incorporates a new functional feature consisting of a set of analytics per design. These analytics will help the users of the platform to get a summarised, overall idea of their own projects, and of those projects that are publicly visible to the community.

For each project, a new tab is available in the user interface of the platform. Two main sources of information can be found there:

1) A summary of the project, showing: the number of visits to the project and the number of comments it has received; a graphical description of the number and subject of the activities of the project, their modality, and the number of CT skills fostered in each phase of the project:



2) More detailed analytics per each step or phase of the FERTILE Design Methodology ("Understanding", "Generating", "Formulating", "Creating", "Evaluating"). For instance, for the "Understanding" phase (the same information is displayed for the other phases):

Creating

Number of Activities: 2